

T H E
GARDENERS DICTIONARY:
CONTAINING
The BEST and NEWEST METHODS
O F
CULTIVATING *and* IMPROVING
T H E
Kitchen, Fruit, Flower Garden, *and* Nursery;

As also for Performing the
Practical Parts of AGRICULTURE:
INCLUDING
The MANAGEMENT of VINEYARDS,
WITH THE
Methods of MAKING and PRESERVING the WINE,
According to the present Practice of
The most skilful Vignerons in the several Wine Countries in *Europe.*
TOGETHER WITH
DIRECTIONS for PROPAGATING and IMPROVING
From REAL PRACTICE and EXPERIENCE,
ALL SORTS OF TIMBER TREES.
THE SEVENTH EDITION,
REVISED and ALTERED according to the latest SYSTEM of BOTANY,
AND EMBELLISHED WITH
Several COPPER-PLATES, which were not in the former EDITIONS.

By P H I L I P M I L L E R, F. R. S.
Gardener to the Worshipful Company of APOTHECARIES, at their Botanick Garden
in *Chelfea*, and Member of the Botanick Academy at *Florence.*

Digna manet divini gloria ruris.

VIRG. Georg.

V O L U M E I.

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M.DCC.LXIV.

GARDENERS' DICTIONARY:

CONTAINING

THE BEST AND NEWEST METHODS

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KITCHEN, FRUIT, FLOWER GARDEN, AND NURSERY.

As also for Potting the

SEEDLING, PLANT, AND AGRICULTURE.

INCLUDING

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A NEW SYSTEM OF CULTIVATING AND IMPROVING

THE SEVERAL SORTS OF TREES

AND THE SEVERAL SORTS OF FRUIT TREES.

THE SECOND EDITION, CORRECTED AND IMPROVED BY THE AUTHOR.

AND ENLARGED WITH

NEW PLATES, WHICH WERE NOT IN THE FIRST EDITION.

By PHILIP MILLER, F.R.S.
GARDENER TO THE ROYAL SOCIETY OF ARTS, &c. &c.
AND MEMBER OF THE ROYAL ACADEMY OF SCIENCES.

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TO THE RIGHT HONOURABLE

**HUGH PERCY SMITHSON,
EARL OF NORTHUMBERLAND.**

Lord WARKWORTH of Warkworth Castle,

Lord Lieutenant General and General Governor of IRELAND,

Lord Lieutenant and Custos Rotulorum of the Counties of MIDDLESEX and
NORTHUMBERLAND,

Knight of the Most Noble Order of the GARTER,

FELLOW OF THE ROYAL SOCIETY,

And one of the Lords of His MAJESTY'S Most Honourable Privy-Council,

MY LORD,

YOUR Lordship's favourable Reception of the former Edition of this Work, and the kind Hints and Instructions which You have been so good as to communicate to me, for the Improvement of it in this Edition, have laid me under the highest Obligations to Your Lordship, and demand this publick Acknowledgement of Your distinguishing Favour.

If,

DEDICATION.

If, in the Execution, I have been so happy as to merit Your Lordship's Approbation, I shall have the less Doubt of that of the Publick; knowing the just Regard which the most Skilful in this useful Branch of Science pay to Your Lordship's Judgement, and to Your Genius for Improvements, demonstrated so happily upon Your own Estates. I am,

My good LORD,

With equal Respect and Gratitude,

Your LORDSHIP'S

Most Faithful and

Obedient Humble Servant,

Philip Miller.

P R E F A C E

To the New L O N D O N E D I T I O N.

THIS Edition of the *Gardeners Dictionary*, having been published in Numbers weekly, the Publick is already acquainted with the Nature of the Performance, and of Consequence it is the less necessary to enlarge on that Subject here; but as the Bulk has exceeded what was at first proposed, the Purchasers have a Right to be informed how this has happened.

The Plan, upon which the Computation was at first made, contained only one *Latin* and an *English* Title to each Plant, as in the former Editions; but when the first Number was published, the Author was favoured with several Letters, representing, that as the new System of Botany, published by Dr. *Linnaeus*, was now more generally studied than any other, the Titles, which he had given to the Plants, would soon be more known, especially to young Botanists, and probably be preferred to any other: They therefore wished the Author would adopt those Names; which, they were sure, would render the Work more complete.

When this Alteration was agreed upon, it became necessary to add to the new Titles of the Plants, those which had been applied to them in the former Editions of the Book, for the Benefit of such as were possessed of any of them, as also for the better ascertaining the Plants to which the new Titles were applied.

This Alteration made a very considerable Addition to each Article.

Soon after this, the Author received Letters from the Purchasers, requesting that the Plan might be yet farther enlarged, by adding short Descriptions to each Plant, which, they represented, would be expected in a Work of this Nature, and without it, would suppose it imperfect: They therefore wished it to be performed, and they represented, that though these Additions should swell the Work to a greater Bulk than was at first proposed, yet the Generality of the Purchasers would be better pleased, than if it was omitted. Upon repeated Representations of this Kind, the Author consulted some of his Friends, upon whose Judgment he could depend, and they gave it as their Opinion, that it would be right to comply with these Requests, as, by so doing, the Work would be rendered as completely useful, as could be expected in a Performance of this Nature.

These were the Motives which induced the Author to add to his original Plan, which has swelled the Work beyond his first Intentions, and, he hopes, they will prove satisfactory to all his judicious and candid Readers.

In this Edition are included most of the Plants that have of late been introduced from foreign Countries; but such of them only are enumerated, as the Author is well acquainted with, and has had Opportunities of examining their Flowers; for, as there are several already here, which have not shewn their Flowers as yet, there may probably be some few more of such already in the *English* Gardens, than are to be found taken Notice of in this Work: But there can be but few of these; for the Author presumes to say, that his Situation and extensive Correspondences have given him such Advantages of knowing the Plants which are annually introduced, as few can boast of in *Europe*. And here it is but doing Justice to the Work, to observe, that the Descriptions given of the Plants

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are not copied from Books, but are taken from Nature: The far greater Number are from the growing Plants, which the Author has under his Care, and the others are from dried Samples, which are well preserved; of which he has, perhaps, as large a Collection as can be found in the Possession of any private Person.—

Many Plants are also omitted in this Edition, which were enumerated in some of the former; It is hoped that competent Judges will enter into the Reason for this, as such will discern, that none but those are omitted which are deemed Weeds, and are not cultivated in Gardens, and which therefore would have only added to the Bulk of the Book, and been of little Utility, had they been inserted; while all such of the *British* indigenous Plants, as are preserved in Gardens either for Use or Ornament, are here included, though the Varieties of each Species are not enumerated, as they were in the former Editions. This will not be thought a Defect by the more skilful Botanists, especially as the Varieties are taken Notice of in the Descriptions of the Species: It would therefore have been to little Purpose to have enumerated all the Varieties as different Plants, as has been done by *Tournefort*, *Boerhaave*, and several other Botanists; for, as the Addition of these Varieties has been very great since their Time, and are continually increasing, and, besides, are seldom constant, it would have been endless to attempt the mentioning of them all.

This extraordinary Multiplication of the Varieties in Plants has induced some of the late Writers on Botany to attempt the reducing them to their Specifick Difference, in order to render the Science more intelligible to Students; but, as the former Botanists had been profuse in their Augmentation of the Number of the Species of Plants, some of the Moderns have gone into the contrary Extreme, and have abridged them greatly too much. Indeed it must be allowed, that the ascertaining the real specifick Difference of Plants would be of great Service to the Science of Botany; but this can be no other Way done, than from long Experience in their Culture, and by constant Observations on the different Changes which arise from it, and the Difference of Soils and Situations in which they grow. In this Particular, the Author has had great Advantages from more than forty Years Experience; during which time he has perhaps cultivated as great a Variety of Plants as any Person now living; and from his own Experience of the Alterations which arise in Plants produced by Seeds during that time, it is, that he has attempted to determine their permanent Differences.

The Method here directed for the Culture of Plants, is also founded on Experience, and not deduced from Theory; in other Words, it is such as the Author has found to succeed best, where-ever he has made *Trials* of it. And as he has had Opportunities of making many Experiments on their Culture in various Soils and Situations, what he has here directed on that Head is the Result of many Years Experience, not only of those which are cultivated in Gardens, but also of such as are cultivated in the Fields by the Plough.

The Plants, which are here proposed to be tried in any of the *British* Dominions in *America*, are only such as, there is Reason to believe, will succeed in the Places where the Experiments are desired to be made; and they are confined to such only, as may be of great Utility to the Publick, as well as of real Advantage to the Inhabitants of those Countries; and such only as will not succeed in *Britain* so well, as to render their Culture practicable here, and will not therefore, if they succeed there, interfere with the Growth or Trade of this Country; and their Consumption being here very great, either in Dying, or for some other of our Manufactures, renders them worthy of Trial Abroad, and also of the publick Attention; for if many of those Things can be produced in the *British* Colonies in *America*, which we at present are obliged to purchase from other Countries, it will not only secure a constant Supply of them genuine to our Home Manufacturers, but also enlarge our Commerce by an Exchange of Goods, instead of paying for them in Money.

The Articles of *Husbandry*, and the Directions here given for the Propagation of Timber, are not merely theoretical, but are such as from repeated Experiments have been found to succeed where they have been practised, and may be safely depended on: It were therefore to be wished that those Gentlemen, who have Inclinations for improving their Estates, either by the Cultivation of their Lands, or the Propagation of Timber, would make Trial of them, and not be contented with pursuing the common Methods of Practice among Farmers and others, who are too much prejudiced in Favour of their old Customs to be prevailed upon to alter them, even in those Places where they have had Opportunities of being convinced, by the Success of their Neighbours, of the Advantage which the new Method of Husbandry has over the old.

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In the Culture of *Corn* only, how many Absurdities are continually practised; first, by sowing more than six times the Quantity of Seed which is necessary for the same Extent of Ground; next, by feeding Sheep upon it in the Spring, especially when the Blade is rank, whereby the Stalks are greatly weakened, and this occasions thin Ears, with several other Errors of the like Nature, which we have taken notice of under the several Articles of *Avena*, *Hordeum*, *Secale*, and *Triticum*, and given Directions for a contrary Practice. And with regard to the Management of Pastures, how very few of the practical Farmers are there, who know any Thing of the Matter, although it is one of the most essential, as also one of the most profitable, Articles of Husbandry! For this Reason, we have enlarged upon this Part of Husbandry, under the several Articles of *Grass*, *Land*, *Pasture*, &c.

The Gentry in *France* have of late Years greatly interested themselves in Favour of the new Method of Culture; which they are obliged to this Country for; and although they meet with many more Difficulties in carrying of it into Execution, than can attend it in this Country, yet they seem to be determined to overcome them all; and for their mutual Information, the Gentlemen who reside in different Parts of the Country, have established a Correspondence with *Monsieur du Hamel du Monceau*, of the Royal Academy of Sciences at *Paris*, to whom they send an Account of the Success of all their Experiments, which are annually published for publick Benefit. This is a very laudable Scheme, and no doubt will be attended with proper Success. In one of the annual Volumes published by *Monsieur du Hamel*, he takes Notice of the many Difficulties which had attended them; one of which was, their Want of a proper Set of Instruments for the Purpose: This they have now no Reason to complain of, since that Gentleman has, with indefatigable Industry, made several useful Improvements upon those which were sent from *England*: But one of the greatest Impediments in the Way of carrying this into practice, he says, arises from the Attachment which their People have to their old Method, so that those who are employed in the practical Parts, do whatever they can to render the Experiments unsuccessful; yet with all the Disadvantages which have attended their Experiments, they have constantly found, that the Produce of the Land has been at least equal to any other which was managed in the old Way: But here he observes, that should the Produce be no greater in the new Method of Culture than in the old, yet by saving seven Parts in eight of the Seed Corn which is annually sown, it must be of great Importance to a whole Country, more especially in Times of Scarcity.

The *French* are also equally industrious in their propagating Timber Trees on their extensive waste Lands; and have of late Years introduced a great many Species of Trees from different Parts of the World, which they are trying to naturalize to their Climate, in order to find which of them may be worthy of Propagation, either for Use or Beauty: But although they are so very intent upon increasing their Variety of Trees and Shrubs from other Countries, yet they do not neglect the Culture of their own useful Timber Trees, especially the Oak; for, as they seem to be very much in earnest to improve and increase their Marine, they are pursuing several Schemes, which in Time will enable them to carry their Point. Surely then this should not be neglected in *Britain*, as the Welfare of this Country principally depends on its Shipping and Commerce. But enough of this is mentioned in the Body of the Work, under the several Articles of *Timber Trees* and *Woods*; to which we refer the Reader.

It may, and I do not doubt but it will, be objected by some, that the Taste for planting is now become so general in *England*, that there is no Likelihood of any Want of Timber here in after Ages. To this I must reply, that although there is a great Spirit at present among People of the first Rank for planting and beautifying their Country Seats, yet there are but few of them who aim at more than the present Beauty of their Parks and Gardens; and the Trees generally planted are such, as they expect to make a Figure soon, are large when planted, and of such Sorts as are of speedy Growth. Not many of the Possessors, or Designers of these Plantations have any Regard to the Propagation or Increase of Timber; so that most of the Plantations which have been executed for thirty or forty Years past, have been so far from improving the Stock of Timber in *England*, that, on the contrary, they have forwarded its Destruction, by transplanting many Thousands of large Trees from natural Woods, &c. into Parks and Gardens, for present Appearance; which have sometimes lived a few Years after their Removal, but have made little or no Progress, and have then decayed; whereas, had they been permitted to stand where they grew from Seeds, they might have become good Timber Trees; and it is well known, that the Timber of transplanted Trees is not near so good for Use, nor is ever of so large a Size, as that which comes from Seed.

The

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The Cutting down of the Oak Timber in the Spring of the Year, when the Bark will easily part from the Wood, as it is now generally practised in *England*, is also a very great Absurdity; for the Sap of the Trees being at that Time in full Motion in all their Vessels, the Timber soon after cutting is cracked and torn in many Places, when exposed to the Air, and will not last a fourth Part of the Time, as that which is cut in Winter, when the Sap is thickened and at rest; yet there is an Act of Parliament to oblige every one to cut their Timber at that Season for the Sake of the Bark. The *French*, who have made many Experiments to try the Duration of Timber by cutting it down at both Seasons, having found so great Difference as is before mentioned, never cut down their Oaks in the Spring; but, to preserve the Bark, it is stripped from the Trees in the Spring, when it will easily peel off, and the Trees are permitted to stand till the Winter following, and are then felled, by which they find the Timber as durable as if the Trees had been cut down at the same Season, and not been barked, and hereby the Bark is also saved. This surely is worthy our Imitation.

The Alterations in the several Catalogues of Trees and Plants at the End of the Book were made to bring the whole into less Compass; for which Reason their specifick Differences are not put down at full Length: The Generical Titles of each being mentioned, and the Figures added to them, denote the Species as they are ranged in the Body of the Work, which, it is hoped, will be found of equal Use to the Reader as by the former Method; for it is only turning to the Articles of the Genera, where they will find the descriptive Titles of each, and there their Culture is also to be found, with the Method of propagating them. The Use of these Catalogues is too great to be wholly omitted; and if they were more attended to by those who set up for Designers of Gardens, &c. there would be fewer Absurdities committed in the Disposition of the Trees, Shrubs, and Plants; for how often do we see Trees of the largest Growth planted, where a Honeysuckle, or some other low Shrub, would make a better Appearance!

In the whole of this Performance, the Author has principally aimed at rendering the Instructions given in it, as clear and intelligible to the Practitioners, as well as to the Learners of the Art, as possible: In particular, he has every where had the strictest Regard to Truth, not advancing any Thing as such, but what he has been fully convinced of by his own Experience. He hopes therefore for Indulgence from the Publick for any Imperfections which may appear in the Book; since, in a Work of so great Extent, it cannot be expected to be absolutely perfect; though, it is humbly hoped, there will not be found in it many great Faults.

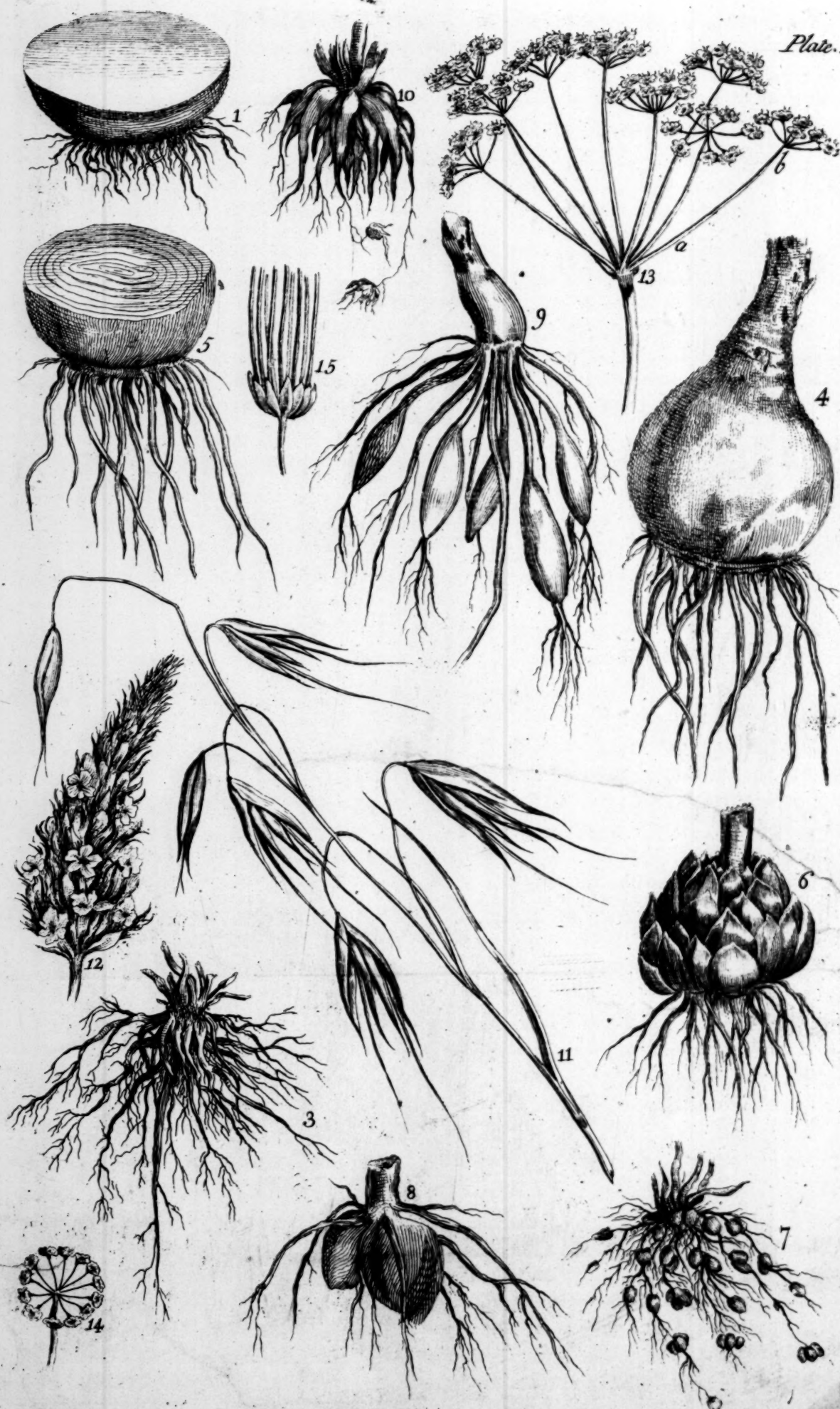
Some Errours of the Press have accidentally crept in, occasioned by the Author's other necessary Avocations, which frequently called him into the Country during the Time it was printing, and prevented his Revival of several of the Sheets; but these are most of them very slight, and may be easily corrected by the Reader's Pen.*

The *Gardener's Kalendar*, which was inserted in the former Editions of this Book, is here omitted. As there have been many Editions of that Piece printed separate, it is presumed there are few Persons without it, who have any Inclination for Gardening; it would therefore have unnecessarily swelled a Work, which the Author wishes he could have still further shortened; and moreover it has been observed to him by many of his Friends, that few Persons would choose to turn over so large a Volume, to find in it the Articles and Instructions that they may have in a portable one, and as a Pocket Companion.†

If, in the Alterations and Corrections which are made in this Edition of the *Gardener's Dictionary*, the Author should be so happy, as to have answered the Expectations of the Publick, he will think himself equally honoured and recompensed for all his Trouble; and he begs Leave to acknowledge in the humblest Manner, his Obligations for the kind Reception given to his former Labours.

* In this Edition, these Errors have been corrected.

† A New Edition of the *Gardener's Kalendar* much enlarged and improved by the Author, has been lately published by G. and A. Ewing.



A N

E X P L A N A T I O N

O F T H E

T E C H N I C A L T E R M S of B O T A N Y

Mentioned in this

W O R K.

A ROOT, *Radix*, is that Part of a Plant, by which it naturally receives its Nourishment. There are several Sorts of these, as

A fibrous Root, *Radix fibrosa*, is that which consists only of Fibres. See Plate 1. Fig. 3.

A tuberous Root, *Radix tuberosa*, is that which consists of an uniform fleshy Substance, and is of a roundish Figure. See Plate 1. Fig. 1. and 2. is cut horizontally.

A bulbous Root, *Radix bulbosa*, is that which consists of several Coats involving one another as is shewn Plate 1. Fig. 4, and 5. or of several Scales lying over one another as in Plate 1. Fig. 6. The first of these is called a tunicated Root, the last a squamous Root.

A granulous Root, *Radix granulosa*, is a Kind of grumous Root with small Knobs resembling so many Grains of Corn. See Plate 1. Fig. 7.

A testiculated Root, *Radix testiculata*, is a double tuberous Root, consisting of two fleshy Knobs resembling a Pair of Testicles. See Plate 1. Fig. 8.

An asphodel Root, *Radix asphodeli*, is a Kind of grumous Root, whose fleshy Fibres swell into large Knobs toward the Bottom resembling the Dugs of Animals. See Plate 1. Fig. 9.

A grumous Root, *Radix grumosa*, is one which is composed of several fleshy Knobs ending in Fibres. See Plate 1. Fig. 10.

A Stalk, *Caulis*, is a Part of a Plant, receiving the Nourishment from the Root, and distributing it into the other Parts with which it is cloathed, not having one Side distinguishable from the other. The Stalk of a Tree is called the Trunk or Stem, (*i. e.*) *Caudex*.

A Branch, *Ramus*, is the Division of a Stalk. In Trees it is generally called a Bough.

A Pedicle, *Pediculus*, is that Part of a Stalk, which immediately sustains a Leaf, a Flower, or a Fruit. Dr. *Linnaeus* has distinguished these. Those which sustain the Leaves he calls *Petiolus*, and those which sustain the Fruit, *Pedunculus*.

A Spike, *Spica*, is a Part of a Stalk thick set with

Flowers or Fruits, in such a manner as to form an acute Cone. See Plate 1. Fig. 12.

A Thyse, *see Thyrsus*, differs from a Spike in that the Flowers or Fruits are set more loosely on it, so that there are Spaces visible between them.

A Panicle, *Panícula*, is a Stalk diffused into several Pedicles sustaining the Flowers or Fruits. See Plate 1. Fig. 11.

An Umbel, *Umbella*, is the Extremity of a Stalk or Branch, divided into several Pedicles or Rays, beginning from the same Point, and opening in such a Manner as to form an inverted Cone. See Plate 1. Fig. 13. When the Pedicles (a), into which the Stalk is divided, are subdivided into others of the same Form, upon which the Flowers or Fruits are disposed (b). The first Order (a) is called Rays, the second (b) Pedicles. That Umbel which consists of one Pedicle only is called a simple Umbel. See Fig. 15. Plate 1. That which is composed both of Rays and Pedicles, is called a compound Umbel, as Fig. 13.

A Corymbus differs from an Umbel, in that the Rays or Pedicles, are disposed in such a Manner as to form a Sphere. See Plate 1. Fig. 14.

A twining Stalk, *caulis volubilis*, is one which twists about any Prop or Tree without the Help of Tendrils.

A climbing Stalk, *Caulis scandens*, is that which fastens itself to any Prop or neighbouring Support by the Help of Tendrils.

A creeping Stalk, *Caulis repens*, is that which lies on the Ground and propagates itself by emitting Roots at the Joints.

A trailing, or procumbent Stalk, *Caulis procumbens*, is that which lies on the Ground unless it is supported, but does not emit Roots.

A Tendril, *Capreolus* or *Clavicula*, is a Part of a Stalk, or rather a Branch from the Side of a Stalk, placed opposite to the Leaf, which curls and lays hold on any adjacent Body, and thereby supports the Stalk, as in the Vine, &c.

A Fruit, *Fructus*, is that Part of a Plant which contains

An EXPLANATION of the Technical Terms of BOTANY.

tains the Seed with its Covering. Of this there are many different Forms.

A Cone, *Conus*, is a dry Seed Vessel, consisting of several ligneous Parts, adhering closely together, and separating  Of this there are several Sorts which differ in their Form and Texture, as in Plate 2. Fig. 1. is a Cone of the Pinaster whose ligneous Scales end in sharp Protuberances, which open by the Warmth of the Sun in the Spring, and easily emit the Seeds. Fig. 2. Plate 2. shews the Cone of the Cedar of *Libanus* whose Scales are smooth, lying close over each other, and drop off leaving the middle Column on the Branches. Fig. 3. Plate 2. exhibits a Cone of the Fir Tree, whose Scales are smooth, and the Form oblong. Fig. 4. and 5. Plate 2. shews the Cone of the Cypress, which is of an irregular spherical Form, and the Scales separate emitting the Seeds from between them. Fig. 6. Plate 2. represents the Cone of the Pine Tree whose Scales terminate in blunt Protuberances.

Dry Seed Vessels, according to the Number of Cells into which they are divided, are called Unicapsular, Bicapsular, quinqucapsular, &c. See Plate 2. Fig. 8, and 9.

An Apple, *Pomum*, is generally understood to be a fleshy Fruit inclosing several hard Seeds in the Center, but it is very difficult to know what the Antients meant by the Title Pomum, for this Title is frequently used in their Writings to express Things of different Forms, therefore this Epithet should be only applied to those Fruits which are umbilicated, and contain many Seeds. See Fig. 11. and 12. Plate 2.

Acini is by some supposed to be the Berries of Grapes and Currants, but is used in a more extensive Sense by most of the Writers on Botany, who stile the small Protuberances of Mulberries, Strawberries, &c. Fig. 7. Plate 2. *Acini*.

A Cluster, *Racemus*, is a Stalk divided or branched into several Pedicles, sustaining the Flowers or Fruits thick set together in an oblong Form. See Fig. 12. Plate 2. The first of these Conditions distinguishes it from a Spike, the last from a Panicle.

A Pod, *Siliqua*, is a long membranaceous Seed Vessel, either flat or round, containing one or two Rows of Seeds. See Fig. 13. and 14. Plate 2. Some of these are jointed, each of the Swellings containing one Seed, as is shewn Fig. 15. Plate 2.

The Seeds of Corn and Grass are called Grains, *Grana*. The Leaf which covers the Grain is called Chaff, *Gluma*, Fig. 16. Plate 2. *a* The Beard, *Arista*. *b* is a small Needle proceeding from the Chaff. The Chaff which has no Beard is called naked.

A Plum, *Prunum*, is a fleshy Vessel inclosing a hard brittle Shell, in which is one or two Seeds.

A Nut, *Nux*, is a Seed covered with a hard dry brittle Shell.

A Flower, *Flos*, is the Organs of the Generation of both Sexes, adhering to a common Placenta, together with their common Coverings; or of either Sex separately, with its proper Coverings, if it have any.

Flowers are either male, female, or hermaphrodite. The male Flowers have Stamina and Summits, but have no Ovary or Style. Female Flowers have an

Ovary and Style, but have no Stamina or Summits. Hermaphrodite Flowers have both Organs of Generation.

The Ovary, *Ovarium*, or *Germen*, according to *Linnaeus*, is the Rudiment of the Fruit. See *a* Fig. 13. Plate 3. and so is properly the female Organ of Generation.

The Style, *Stylus*, is a Body accompanying the Ovary, either arising from the Top of it, see *b* Fig. 13. Plate 3. or standing as an Axis in the Middle with the Embyrons of the Seeds round it. Fig. 12. Plate 3. and *c* is the Stigma.

The Empalement, *Calix*, is generally understood to mean, those less tender Leaves, which cover the other Parts of the Flower. See Fig. 11. *a* Plate 3. These, according to Mr. Ray, are of an herbaceous Colour.

The Petals, *Petala*, are those tender fine-coloured Leaves which are the most conspicuous Parts of a Flower. See Fig. 11. *b* Plate 3.

The Stamina or Filaments, according to *Linnaeus*, which some call Chives, are those slender Threads which generally surround the Style. See *c* Fig. 11. Plate 3.

The Summits or Apices, which *Linnaeus* calls *Anthera*, are those Bodies which contain the *Farina fecundans* or Prolifick Powder, analagous to the male Sperm in Animals; these generally terminate the Summits. See *d* Fig. 11. Plate 3.

Flowers according to the Number of their Petals, are called monopetalous, dipetalous, tripetalous, tetrapetalous, &c.

A regular monopetalous Flower is that in which the Petal is not at all divided. See Fig. 1. Plate 3. or if divided, the Segments are equal, as in Fig. 2. Plate 3.

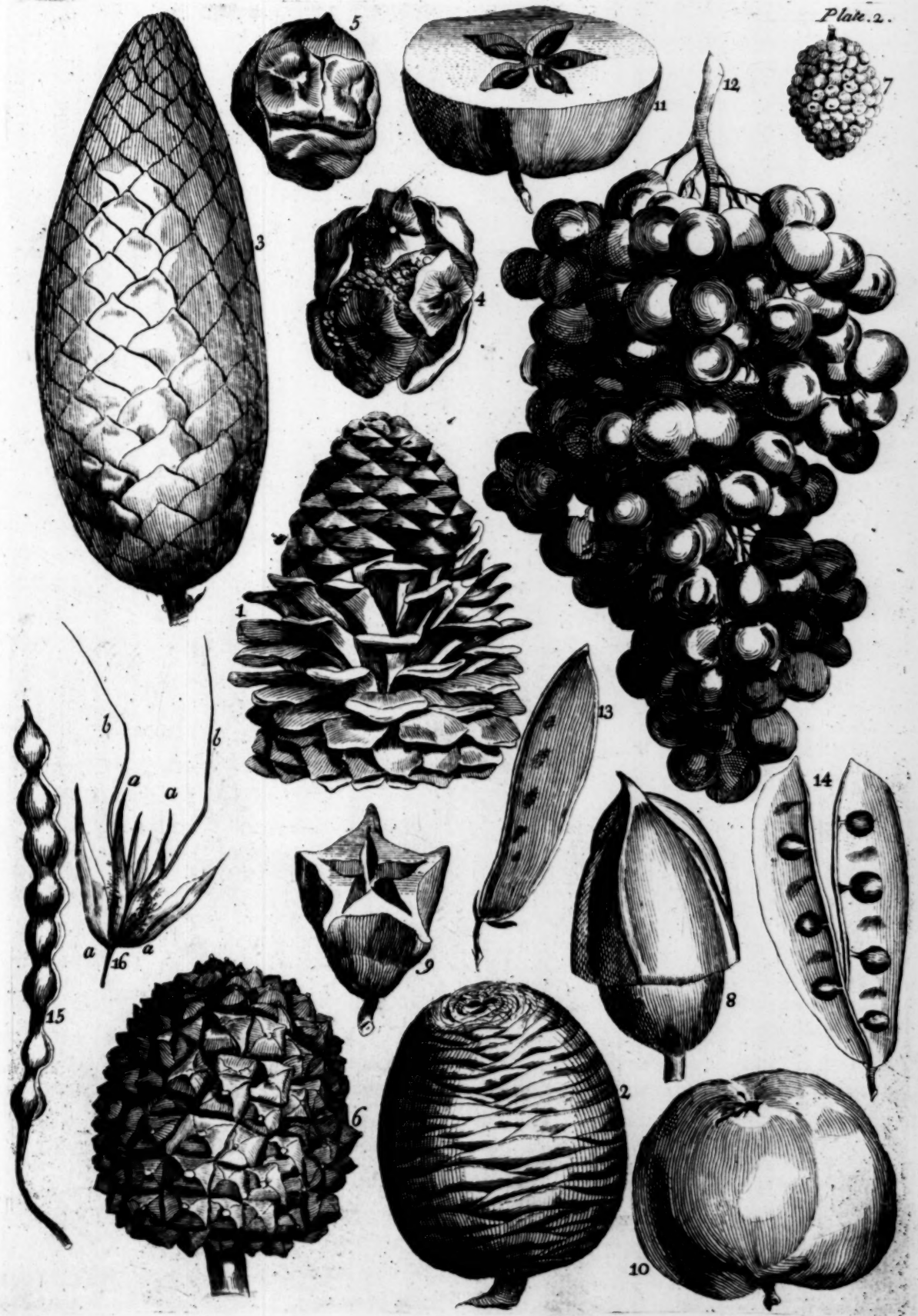
An irregular monopetalous Flower, is that in which the Parts of the Petal are unequal, as in Fig. 3. Plate 3. these Dr. *Linnaeus* calls ringent Flowers. Mr. Ray, *Tournefort*, and others, call all those monopetalous Flowers, whose Petals are connected at their Base, and fall off without separating; but Dr. *Linnaeus* calls them tetrapetalous or pentapetalous, when the Petal is divided into so many Parts to the Bottom.

A regular polypetalous Flower, is when the Petals are equal in Size, and agree in Position, as in Fig. 3. Plate 3.

An irregular polypetalous Flower is when the Petals do not agree together in Figure and Position. See Fig. 9. and 10. Plate 3.

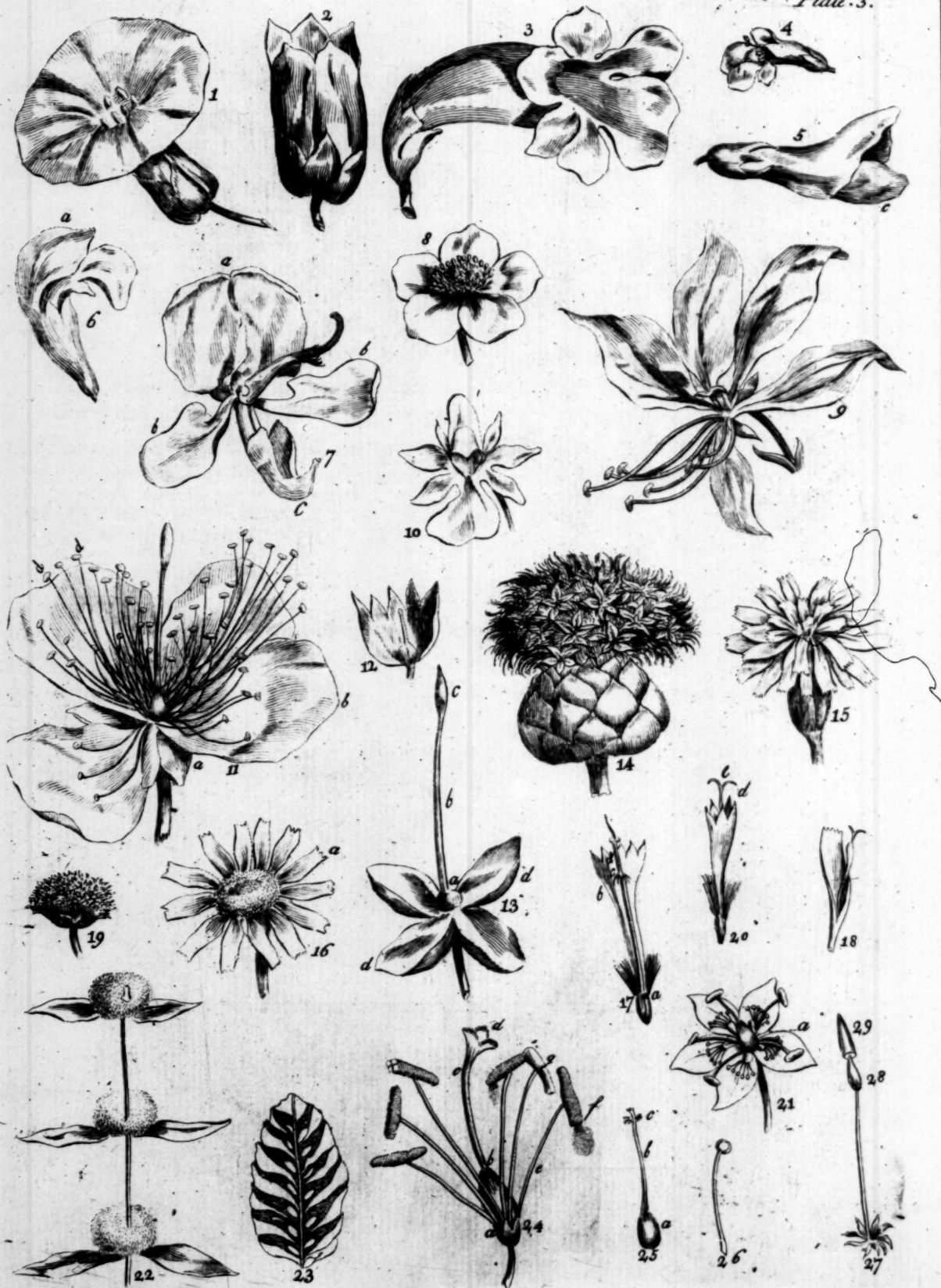
A labiated or Lip Flower, *Flos Labiatus*, is an irregular monopetalous Flower divided usually into two Lips, as in Fig. 6. Plate 3. The upper Lip *a* is called the Crest, *Galea*, and the under one *b*, the Beard, *Barba*. Sometimes the Crest is wanting, as in Fig. 4. Plate 3. and then the Style and Stamina supply its Place. This is by some called an unlabiated Flower.

A papilionaceous Flower, *Flos papilionaceus*, in some Measure resembles a Butterfly with its Wings extended. See Fig. 5. and 7. Plate 3. It always consists of these 4 Parts: The Standard, *Vexillum a*, which is a large Segment or Petal; the two Wings, *Alae b* which compose the Sides; and the Keel, *Carina c*, which









AN EXPLANATION of the A U T H O R S N A M E S.

which is a concave Petal or Segment, resembling the lower Part of a Boat; the Keel is sometimes of one Petal or Segment and entire; sometimes it consists of two Petals or Segments adhering pretty closely together.

A Floret, *Flosculus*, is a little Tube expanded at the Top, usually into five Segments. See Fig. 17. and 20. Plate 3. and sitting upon the Embryon of a single Seed *a*; from the inner Part of the Floret arise five Stamina *b*, which uniting together form a Sheath *c*; from the Embryon of the Seed *a*, arises a Style *d*, which passes through the Sheath *c* to which it is connected, and is terminated by a bifid Stigma which is generally reflexed, *e*. These are hermaphrodite.

A Semifloret, *Semiflosculus*, is tubulous at the Base, and afterwards expanded in Form of a Tongue. See Fig. 18. Plate 3. These generally form the Rays of compound Flowers, and are female.

A compound Flower, *Flos compositus*, is that which is composed either of Florets, Fig. 19. Plate 3. or Semiflorets, Fig. 15. Plate 3. or both together, Fig. 16. and Fig. 20.

A Disk, *Discus*, is an Aggregate of Florets forming, as it were, a plain Surface, as in Fig. 19. Plate 3. Such Flowers are called discous Flowers.

A Ray, *Radius*, is several Semiflorets set round a Disk.

See Fig. 16. *a*, Plate 3. in Form of a radiant Star. Such Flowers are called radiated discous Flowers; those which have no such Ray are called naked discous, as Fig. 19. Plate 3.

A headed Flower, *Flos capitatus*, is that which is composed of Florets and Semiflorets collected into a roundish Head, and are all inclosed in one common scaly Empalement, as in Fig. 14. Plate 3.

A whorled Flower, *Flos verticillatus*, is when the Flowers are collected in Whorls round the Stalks at the Base of the Leaves, as in Fig. 22. Plate 3.

A Moss Flower, which rises on a slender Foot Stalk from the Plant, Fig. 27. Plate 3. with the Head (or Capitulum), Fig. 28. and the Cover (or Calyptra) which opens and falls off when the Seeds are ripe.

A Cone cut through the Middle longitudinally to represent how the Seeds are lodged between the Scales. See Fig. 22. Plate 3.

Fig. 24. Plate 3. shews the Parts of a Flower, *a* is the Empalement, *b* the Germen, *c* the Style, *d* the Stigma, *e* the Stamina, *f* the Summit, and *g* the same entire.

Fig. 21. Plate 3. shews a Flower with several Nectaria which sit close to the Germen *a*.

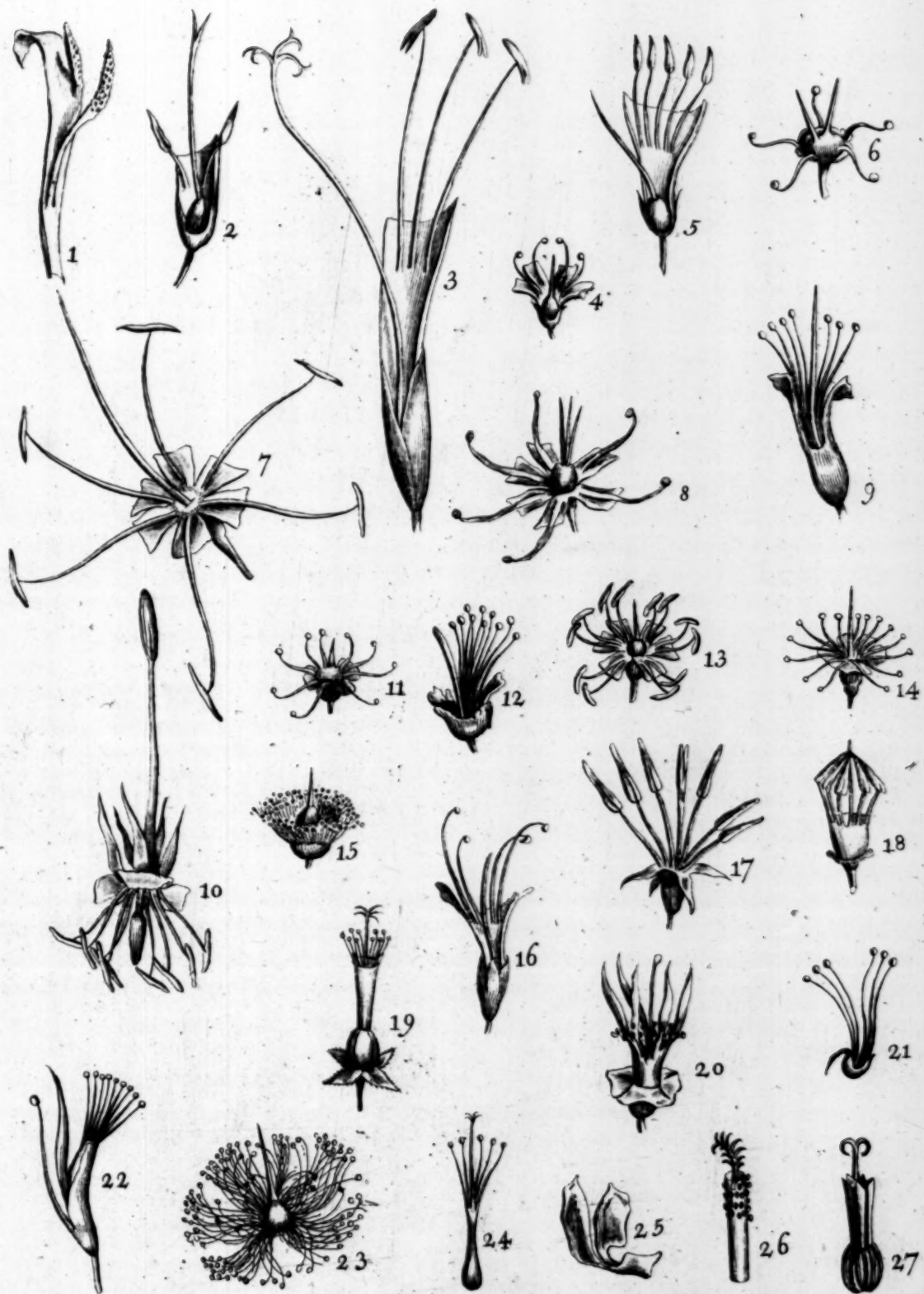
Fig. 25. *a* shews a Germen, *b* a Style, and *c* a Stigma.

Fig. 26. shews a Grain of *Farina fecundans* magnified.

P L A T E IV.

Contains the Figures which explain the System of Dr. Linnæus, who classes the Plants by the Number of Stamina in their Flowers.

- F**ig. 1. shews a Flower with one Stamina and one Style, which he titles *Monandria Monogynia*.
 Fig. 2. shews a Flower with two Stamina and one Style, which he titles *Diandria Monogynia*.
 Fig. 3. shews a Flower with three Stamina and one Style, which he titles *Triandria Monogynia*.
 Fig. 4. shews a Flower with four Stamina and one Style, which he titles *Tetrandria Monogynia*.
 Fig. 5. shews a Flower with five Stamina and one Style, which he titles *Pentandria Monogynia*.
 Fig. 6. shews a Flower with five Stamina and two Styles, which he titles *Pentandria Digynia*.
 Fig. 7. shews a Flower with six Stamina and one Style, which he titles *Hexandria Monogynia*.
 Fig. 8. shews a Flower with six Stamina and three Styles, which he titles *Hexandria Trigynia*.
 Fig. 9. shews a Flower with seven Stamina and one Style, which he titles *Heptandria Monogynia*.
 Fig. 10. shews a Flower with eight Stamina and one Style, which he titles *Octandria Digynia*.
 Fig. 11. shews a Flower with nine Stamina and one Style, which he titles *Enneandria Monogynia*.
 Fig. 12. shews a Flower with ten Stamina and one Style, which he titles *Decandria Monogynia*.
 Fig. 13. shews a Flower with twelve Stamina and one Style, which he titles *Dodecandria Monogynia*.
 Fig. 14. shews a Flower with more than twelve Stamina, but less than twenty, and these arise either from the Petals or the Empalement, and with one Style, which he titles *Icosandria Monogynia*.
 Fig. 15. shews a Flower with a great Number of Stamina and one Style, which he titles *Polyandria Monogynia*.
 Fig. 16. shews a Flower with two long, and two shorter Stamina, and one Style, which he titles *Didynamia*.
 Fig. 17. shews a Flower with four long and two shorter Stamina, and one Style, which he titles *Tetradynamia*.
 Fig. 18. shews a Flower with five Stamina which are connected with the Style in one Body, which he titles *Monadelphbia Pentandria*.
 Fig. 19. shews a Flower with ten Stamina and one Style, which are joined at the Base into one Body, which he titles *Monadelphbia Decandria*.
 Fig. 20. shews a Flower with many Stamina joined in one Body, with a many-pointed Style, which he titles *Monadelphbia Polyandria*.
 Fig. 21. shews a Flower with six Stamina joined in two Bodies, which he titles *Diadelphbia Hexandria*.
 Fig. 22. shews a Flower with ten Stamina, nine of which are joined together at their Base, and the other is separated, with one Style. This he titles *Diadelphbia Decandria*.
 Fig. 23. shews a Flower with many Stamina, which are connected at their Base into several Clusters or Bunches, which he titles *Polyadelphbia Polyandria*.
 Fig. 24. shews a single Floret of a compound Flower. These which are hermaphrodite have five Stamina and one Style which are connected at their Base. This Class he titles *Syngenesia*.
 Fig. 25. shews a Flower whose Stamina are connected with, and seem to proceed from, the Style, which is divided into two Parts. This he titles *Gynandria*.
 Fig. 26. shews a Flower of the sixteenth Class, which is of a different Figure from those before represented. The Stamina of this stand round the Column formed by the Style.
 Fig. 27. shews a Floret of the compound Flowers sitting upon the Germen or Embryo of the Seed, with the two reflexed Stigmas on the Top of the Style.



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O F T H E

A U T H O R S N A M E S and W O R K S

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The Class and Order of each Plant, according to the System of Dr.
LINNÆUS.

Genus.	Class.	Order.	Genus.	Class.	Order.	Genus.	Class.	Order.
Abies	21	9	Apium	5	2	Bombax	13	1
Abrotanum	19	2	Apocynum	5	2	Bontia	14	2
Abſinthium	18	2	Aquilegia	13	5	Borbonia	17	3
Abutilon	16	3	Arabis	15	2	Borrago	5	1
Acacia	13	1	Arachis	17	3	Bofia	5	2
Acalypha	21	9	Arbutus	10	1	Brabejum	4	1
Acanthus	14	2	Arctium	19	1	Brasſica	15	2
Acer	23	1	Arctotis	19	4	Breynia	13	1
Acetoſa	6	3	Argemone	13	1	Bromelia	6	1
Aconitum	13	3	Aristolochia	20	5	Browallia	14	2
Acorus	6	1	Armeniaca	12	1	Brunſfelsia	5	1
Actæa	13	1	Arnica	19	2	Bryonia	21	10
Adenantha	10	1	Artemiſia	5	2	Bubon	5	2
Adonis	13	7	Artemiſia	18	2	Buddleja	4	1
Æſchynomene	17	3	Arum	20	7	Bugula	14	1
Æſculus	7	1	Arundo	3	2	Bulbocodium	6	1
Agave	6	1	Aſarina	14	2	Bunias	15	2
Ageratum	17	1	Aſarum	11	1	Bunium	5	2
Agrimone	11	2	Aſclepias	5	2	Buphthalmum	19	2
Agroſtemma	10	5	Aſcyrum	18	3	Bupleurum	5	2
Alaternus	5	1	Aſpalathus	17	3	Butomus	9	3
Alcea	16	3	Aſparagus	6	1	Buxus	21	4
Alchimilla	4	1	Aſperugo	5	1	Cacalia	21	1
Allium	6	1	Aſphodelus	6	1	Cacao	18	1
Alnus	21	4	Aſplenium	24	1	Cachrys	5	2
Aloe	6	1	Aſter	19	2	Cactæ	12	1
Alpinia	1	1	Aſtragalus	17	3	Cæſalpina	10	1
Alyſſum	15	1	Aſtrantia	5	2	Calendula	19	4
Amaranthus	21	5	Athamanta	5	2	Calla	20	7
Amaryllis	6	1	Atracſylis	17	1	Caltha	13	7
Ambroſia	21	5	Atraphaxis	6	2	Cameraria	5	1
Amethyſtea	2	1	Atriplex	23	1	Campanula	5	1
Ammannia	4	1	Atropa	5	1	Canna	1	1
Ammi	5	2	Avena	3	2	Cannabis	22	5
Amomum	1	1	Aurantium	18	2	Capparis	13	1
Amorpha	17	3	Auricula Urſi	5	1	Capraria	14	2
Amygdalus	12	1	Azalea	5	1	Capſicum	5	1
Anacardium	10	1	Baccharis	19	2	Cardamine	15	2
Anacyclus	19	3	Banifieria	10	3	Cardiaca	14	1
Anagallis	5	1	Barleria	14	2	Cardioſpermum	8	3
Anagyris	10	1	Bartramia	10	1	Carduus	19	1
Ananas	6	1	Bafella	5	3	Carica	22	9
Anaſtatica	15	1	Bauhinia	10	1	Carlina	19	1
Anchuſa	5	1	Bellis	19	2	Carpinus	21	8
Andrachne	21	11	Bellonia	5	1	Carthamus	19	1
Androſace	5	1	Berberis	6	1	Carum	5	2
Andryala	19	1	Befleria	14	2	Caryophyllus	13	1
Anemone	13	6	Beta	5	2	Caffia	10	1
Anethum	5	2	Betonica	14	1	Caffine	5	3
Angelica	5	2	Betula	21	4	Caſtanea	21	8
Anguria	21	10	Bidens	19	1	Catananche	19	1
Anil	17	3	Bignonia	14	2	Cateibæa	4	1
Anona	13	7	Biſcutella	15	1	Ceanothus	5	1
Anthemis	19	2	Biſerrula	17	3	Cedrus	5	1
Anthericum	6	1	Biſtorta	8	3	Celaſtrus	5	1
Antholyza	3	1	Bixa	13	1	Celofia	5	1
Anthoſpermum	23	2	Blitum	1	2	Celfia	14	2
Anthyllis	17	3	Bocconia	13	1	Celtis	21	2
Antirrhinum	14	2	Boerhaavia	1	1	Centaurea	19	3
Aphaca	17	3						Genus

Genus.	Clafs.	Order.	Genus.	Clafs.	Order.	Genus.	Clafs.	Order.
Cephalanthus	4	1	Coris	5	1	Echinophora	5	2
Cerastium	10	4	Corispermum	1	2	Echinops	17	1
Ceratonia	22	5	Cormis	4	1	Echium	5	1
Cerbera	5	1	Cornutia	14	2	Elæagnus	4	1
Cercis	10	1	Coronilla	17	2	Elephantopus	17	1
Cereus	12	1	Cortufa	5	1	Emerus	17	3
Cerithe	5	1	Corylus	21	8	Empetrum	22	3
Cestrum	5	1	Costus	1	1	Ephedra	22	11
Chærophyllum	5	2	Cotula	19	2	Epigæa	10	1
Chamærops, Appendix			Cotyledon	10	4	Epilobium	8	1
Cheiranthus	15	2	Crambe	15	2	Epimedium	4	1
Chelidonium	13	1	Craniolaria	14	2	Erica	8	1
Chelone	13	2	Crassula	5	5	Erigeron	19	2
Chenopodium	5	2	Cratægus	12	2	Erinus	14	2
Chionanthus	2	1	Crateva	11	1	Erioccephalus	19	4
Chironia	5	1	Crepis	19	1	Eruca	5	4
Chondrilla	19	1	Crescentia	14	2	Ervum	17	3
Chrysanthemum	19	2	Crinum	6	1	Eryngium	5	2
Chrysobalanus	13	1	Crithmum	5	2	Erysimum	15	2
Chrysocoma	19	1	Crocus	3	1	Erythrina	17	3
Chrysophyllum	5	1	Crotolaria	17	3	Erythronium	6	1
Chrysosplenium	10	2	Croton	21	9	Euonymus	5	1
Cicer	17	3	Crucianella	4	1	Eupatorium	19	1
Cichorium	19	1	Cucubalus	10	3	Euphorbia	11	3
Cicuta	5	2	Cucumis	21	10	Faba	17	3
Circea	2	1	Cucurbita	21	10	Fagonia	6	6
Cissampelos	22	1	Cuminum	5	2	Fagus	21	8
Cistus	13	1	Cunonia	3	1	Ferula	5	2
Citharexylon	14	2	Cupressus	21	9	Ficus	23	3
Citrus	18	2	Curcuma	1	1	Fœniculum	5	2
Claytonia	5	1	Cyclamen	5	1	Fragaria	12	5
Clematis	13	7	Cydonia	12	4	Frangula	5	1
Cleome	15	2	Cynanchum	5	2	Fraxinus	23	2
Clethra	10	1	Cynara	19	1	Fritillaria	6	1
Cliffortia	22	10	Cynoglossum	5	1	Fuchsia, Appendix		
Clinopodium	14	1	Cypripedium	20	1	Fumaria	17	1
Clitoria	17	3	Cytisus	17	3	Galanthus	6	1
Clusia	13	1	Dalechampia	23	1	Galega	17	3
Cutia	22	13	Damaconium	6	5	Galenia	8	2
Clypeola	15	1	Daphne	8	1	Galeopsis	14	1
Cneorum	3	1	Datisca	22	9	Galium	4	1
Cnicus	19	1	Datura	5	1	Garcinia	11	1
Cochlearia	15	1	Daucus	5	2	Garidella	10	3
Coffea	5	1	Delphinium	13	3	Genista	17	3
Coix	21	3	Dentaria	15	2	Gentiana	5	2
Colchicum	6	3	Dianthera	2	1	Geranium	16	2
Coldenia	4	3	Dianthus	10	2	Gesnera	14	2
Collinsonia	2	1	Dictamnus	10	1	Geum	12	5
Columnnea	14	2	Diervilla	3	4	Gladiolus	3	1
Colutea	17	3	Digitalis	14	2	Gleditsia	23	2
Comarum	12	5	Dioscorea	22	6	Globularia	4	1
Commelina	3	1	Diosma	5	1	Gloriosa	6	1
Conium	5	2	Diospyros	23	2	Glycine	17	3
Conocarpus	5	1	Dipsacus	4	1	Glycyrrhiza	17	3
Convallaria	6	1	Dodartia	14	2	Gnaphalium	19	1
Convolvulus	5	1	Doronicum	19	2	Gomphrena	5	2
Conyza	19	2	Dorstenia	4	1	Gossypium	16	3
Corchorus	13	1	Draba	15	1	Gratiola	2	1
Cordia	5	1	Dracocephalum	14	1	Grewia	20	7
Coreopsis	19	3	Dracontium	20	7	Gronovia	5	1
Coriandrum	5	2	Durantia	14	2	Grossularia	5	1
Coriaria	22	9	Ebenus	17	3	Guajacum	10	1

C

Genus

Genus.	Clafs.	Order.	Genus.	Clafs.	Order.	Genus.	Clafs.	Order.
Guilandina	10	1	Kalmia	10	1	Medicola	6	3
Gundelia	19	1	Karatas	6	1	Medica	17	3
Gypsophyla	10	2	Koempferia	1	1	Medicago	17	3
Haemanthus	6	1	Kiggelaria	22	9	Melampyrum	14	2
Hæmatoxylum	10	1	Knautia	4	1	Melastoma	10	1
Halleria	14	2	Lactuca	19	1	Melia	10	1
Hamamelis	4	2	Lagoecia	5	1	Melianthus	14	3
Hedera	5	1	Lamium	14	1	Melissa	14	1
Hedysarum	17	3	Lantana	14	2	Melo	21	10
Helenium	19	2	Lapsana	19	1	Melongena	5	1
Helianthemum	13	1	Larix	21	9	Melothria	3	1
Helianthus	19	3	Laserpitium	5	2	Menispermum	6	3
Helictères	20	6	Lathyrus	17	3	Mentha	14	1
Heliocarpus	11	2	Lavandula	14	1	Mentzelia	13	1
Heliotropium	5	1	Lavatera	16	3	Mercurialis	22	8
Helleborus	13	7	Laurus	9	1	Mesembryanthemum	12	4
Hemerocallis	6	1	Lawsonia	8	1	Mespilus	12	4
Hepatica	13	7	Ledum	10	1	Micropus	19	4
Hermannia	16	1	Leontice	6	1	Milium	3	2
Hermodactylus	3	1	Leonurus	14	1	Millieria	19	4
Hernandia	21	3	Lepidium	15	1	Mimosa	13	1
Herniaria	15	2	Leucojum	6	1	Mimulus	14	2
Hesperis	15	2	Lichen	13	7	Mirabilis	5	1
Hibiscus	16	3	Ligusticum	5	2	Mitella	10	1
Hieracium	19	1	Ligustrum	2	1	Mollugo	3	3
Hippocastanum	7	1	Lilium	6	1	Molucella	14	1
Hippocratea	21	1	Limodorum	20	1	Momordica	21	10
Hippomane Appen.			Limon	10	2	Monarda	2	1
Hippophae	21	4	Limonium	5	5	Morina	2	1
Holcus	23	1	Linaria	14	2	Morus	21	4
Hordeum	3	2	Linum	5	5	Muntingia	13	1
Horminum	14	1	Lippia	14	2	Musa	23	1
Hottonia	5	1	Liquidamber	21	8	Muscari	6	1
Hura	21	9	Lithospermum	5	1	Myagrum	15	1
Hyacinthus	6	1	Lobelia	19	5	Myrica	22	4
Hydrangea	10	2	Lonchitis	24	1	Myrtus	12	1
Hydrophyllon	5	1	Lonicera	5	1	Napæa	16	3
Hymenæa	10	1	Loranthus	6	1	Narcissus	6	1
Hyoscyamus	5	1	Lotus	17	3	Nasturtium	15	1
Hypocoum	4	2	Ludvigia	4	1	Nepeta	14	1
Hypericum	18	3	Luffa	21	10	Nerium	5	1
Hyslopus	14	1	Lunaria	15	1	Nicotiana	5	1
Jasminum	2	1	Lupinus	17	3	Nigelia	13	5
Jatropha	21	9	Lupulus	22	5	Nyctanthes	2	1
Iberis	15	1	Lychnis	10	5	Nymphæa	13	1
Ilex	4	3	Lycium	5	1	Nyssa	23	2
Impatiens	19	5	Lycopersicon	5	1	Ocymum	14	1
Imperatoria	5	2	Lythmachia	5	1	Œnanthe	5	2
Inga	13	1	Lythrum	11	1	Œnothera	8	1
Inula	19	2	Magnolia	13	7	Oldenlandia	4	1
Johnsonia	4	1	Malope	16	3	Olea	2	1
Ipomoea	1	1	Malpighia	10	3	Onobrychus	17	3
Iris	3	1	Malva	16	3	Ononis	17	3
Isatis	15	2	Malus	12	4	Onopordum	19	1
Isopyrum	13	7	Mammea	13	1	Ophrys	20	1
Itea	5	1	Mandragora	5	1	Opuntia	12	1
Juglans	21	8	Maranta	1	1	Orchis	20	1
Juncus	6	1	Marrubium	14	1	Origanum	14	1
Juniperus	22	11	Martynia	14	2	Ornithogalum	6	1
Jussæa	10	1	Matricaria	19	2	Ornithopus	17	3
Justicia	2	1	Maurocenia	5	3	Orobis	17	3
Ixia	3	1	Meadia	5	1			

Genus.

Genus.	Clafs.	Order.	Genus.	Clafs.	Order.	Genus.	Clafs.	Order.
Oryza	6	2	Polygala	17	2	Samolus	5	1
Osteospermum	19	4	Polypodium	24	1	Samyda	11	1
Osyris	22	3	Pontederia	6	1	Sanguinaria	13	1
Othonna	19	4	Populus	22	7	Sanguisorba	4	1
Oxalis	10	5	Porrum	6	1	Sanicula	5	2
Padus	12	1	Portulaca	11	1	Santolina	19	1
Paeonia	13	2	Potentilla	12	5	Sanindus	8	1
Paliurus	5	1	Poterium	21	8	Saponaria	10	2
Palma Appendix			Prasium	14	1	Sapota	5	1
Panax	23	2	Prenanthes	19	1	Sarracena	13	1
Pancratium	6	1	Primula	5	1	Satureja	14	1
Panicum	3	2	Prinos	6	1	Satyrion	20	1
Papaver	13	1	Protea	4	1	Saururus	6	3
Parietaria	23	1	Prunella	14	1	Saxifraga	10	2
Paris	8	4	Prunus	12	1	Scabiosa	4	1
Parkinsonia	10	1	Psidium	12	1	Scandix	5	2
Parnassia	5	4	Pforalea	17	3	Schinus	10	1
Paronychia	5	1	Ptelea	4	1	Scilla	6	1
Parthenium	21	5	Pulegium	14	1	Sclarea	2	1
Passerina	8	1	Pulmonaria	5	1	Scolymus	19	1
Passiflora	20	4	Pulsatilla	13	7	Scorpiurus	17	3
Pastinaca	5	2	Punica	12	1	Scorzonera	19	1
Pavia	8	1	Pyrola	10	1	Scrophularia	14	2
Paulinia	8	3	Pyrus	12	4	Scutellaria	14	1
Peganum	11	1	Quercus	21	8	Secale	3	2
Pentapetes	16	3	Randia	5	1	Securidaca	17	3
Pereikia	12	1	Ranunculus	13	7	Sedum	10	5
Periclymenum	5	1	Rapa	15	2	Selago	14	2
Periploca	5	2	Raphanus	15	2	Selinum	5	2
Persea	9	1	Rapunculus	5	1	Sempervivum	11	5
Persica	12	1	Rapuntium	19	5	Senecio	19	2
Persicaria	8	3	Ranvolfia	5	1	Senna	10	1
Petalites	19	2	Refeda	11	3	Serapias	20	1
Petiveria	6	4	Rhamnus	5	1	Serratula	19	1
Petrea	14	2	Rheum	9	2	Sesamum	14	2
Peucedanum	5	2	Rhexia	8	1	Seseli	5	2
Phaca	17	3	Rhinanthus	14	2	Sherardia	4	1
Phaseolus	17	3	Rhodiola	22	7	Sicyos	21	10
Philadelphus	12	1	Rhododendron	10	1	Sida	16	3
Phillyrea	2	1	Rhus	5	3	Sideritis	14	1
Phlomis	14	1	Ribes	5	1	Sideroxylum	5	1
Phlox	5	1	Ricinus	21	9	Sigesbeckia	19	2
Phyllica	5	1	Rivinia	4	1	Silene	10	3
Phyllanthus	21	3	Robinia	17	3	Siler	5	2
Phyllis	5	2	Rondeletia	5	1	Silphium	19	4
Phyfalid	5	1	Rosa	12	5	Sinapis	15	2
Phytolacca	10	5	Rosmarinus	2	1	Sison	5	2
Piercea	4	1	Royena	10	2	Sisymbrium	15	2
Pimpinella	5	2	Rubia	4	1	Sisyrrinchium	20	2
Pinus	24	9	Rubus	12	5	Sium	5	2
Piper	2	3	Rudbeckia	19	3	Smilax	22	6
Pisonia	22	5	Ruellia	14	2	Smyrnum	5	2
Pistacia	22	3	Rumex	6	3	Solanum	5	1
Pisum	17	3	Ruscus	22	12	Soldanella	5	1
Platanus	21	8	Ruta	10	1	Solidago	19	2
Plumbago	5	1	Ruyfchiana	14	1	Sophora	10	1
Plumeria	5	1	Saccharum	3	2	Sorbus	12	3
Podophyllum	13	1	Sagittaria	21	8	Spartium	17	3
Poinciana	10	1	Salix	22	2	Speragula	10	4
Polemonium	5	1	Salsola	5	2	Spermacoe	4	1
Polianthes	6	1	Salvia	2	1	Sphaeranthus	19	2
Polium	14	1	Sambucus	5	3	Sphondylium	5	2

Genus.

Genus.	Clafs.	Order.	Genus.	Clafs.	Order.	Genus.	Clafs.	Order.
Spigelia	5	1	Thuya	21	9	Valeriana	3	1
Spinacia	22	5	Thymbra	14	1	Vanilla	20	2
Spiræa	12	4	Thymus	14	1	Vella	15	1
Stachys	14	1	Tiarella	10	2	Veratrum	23	1
Stœhelina	19	1	Tilia	13	1	Verbascum	5	1
Stapelia	5	2	Tithymalus	11	3	Verbena	2	1
Staphylæa	5	3	Toluifera	10	1	Verbesina	19	2
Statice	5	5	Tordylium	5	2	Veronica	2	1
Stewartia	16	3	Tormentilla	12	5	Viburnum	5	3
Stoebe	19	1	Tournefortia	5	1	Vicia	17	3
Stoechas	14	1	Toxicodendron	5	3	Vinca	5	1
Stratiotes	13	6	Trachelium	5	1	Viola	19	5
Styrax	11	1	Tradescantia	6	1	Viscum	22	4
Suriana	5	5	Tragacantha	10	5	Vitex	14	2
Symphytum	5	1	Tragia	21	3	Vitis	5	1
Syringa	2	1	Tragopogon	19	1	Volkameria	14	2
Tabernæmontana	5	1	Tribulus	10	1	Ulex	17	3
Tagetes	19	2	Trichosanthes	21	10	Ulmus	5	2
Tamarindus	3	1	Trichostema	14	1	Urena	16	3
Tamarix	5	3	Tridax	19	2	Urtica	21	4
Tamus	22	6	Trifolium	17	3	Uvularia	6	1
Tanacetum	19	2	Trigonella	17	3	Waltheria	16	1
Tarchonanthus	19	1	Trillium	6	3	Watsonia	3	1
Taxus	22	11	Triosteum	5	1	Xanthium	21	1
Telephium	5	3	Triticum	3	2	Xanthoxylum	5	3
Tetracera	13	4	Triumfetta	11	1	Xeranthemum	19	2
Tetragonia	12	4	Trollius	13	7	Ximenia Appendix		
Tetragonotheca	19	2	Tropæolum	8	1	Xiphion	3	1
Teucrium	14	1	Tulipa	6	1	Yucca	6	1
Thalictrum	13	7	Tulipifera	13	7	Zea	21	3
Thapsia	5	2	Turnera	5	3	Ziziphora	2	1
Theligonium	21	8	Turritis	15	2	Ziziphus	5	1
Theobroma	18	1	Tussilago	19	2	Zygophyllum	10	1
Thlaspi	15	1	Vaccinium	8	1			

T H E GARDENERS DICTIONARY.

A B I

ABELE Tree. See Populus.
ABIES; The Fir-tree. In French Sapin and Avet.

The Characters of this tree are,

It hath male Flowers, which are produced at remote Distances from the Cones on the same Tree. These are composed of many Stamina joined in a Column, supporting erect Summits, and are disposed in a conical Spike. The Female Flowers are also collected in a scaly Cone; each Scale having generally two Flowers. These have no Petals, but from the Embryo arises a single Style, crowned with a blunt Stigma. The Embryo afterwards turns to an oblong Seed or Nut, inclosed between the Scales of the Cones, each Scale having for the most Part two Seeds under it. To this is to be added, that the leaves of the Tree are produced single, whereas those of the Pine have two or more Leaves arising from the same Sheath.

The Species of this Tree, which are at present to be found in the English Gardens, are,

1. ABIES *taxi folio*, fructu sursum spectante. Tourn. The Silver or Yew-leaved Fir Tree.

2. ABIES *tenuiori folio*, fructu deorsum inflexo. Tourn. The Common Fir or Pitch Tree; sometimes called, The Norway or Spruce Fir.

3. ABIES *minor*, pectinatis foliis, Virginiana, conis parvis subrotundis. Pluk. Alm. Virginian Fir Tree with small roundish Cones, commonly called Hemlock Fir.

4. ABIES *picæ foliis brevibus*, conis minimis. Rand. The Pitch-leaved Fir Tree, with small Cones, commonly called, The Newfoundland Black Spruce Fir.

5. ABIES *picæ foliis brevioribus*, conis parvis biuncialibus laxis. Rand. The shortest Pitch-leaved Fir Tree, with loose Cones, commonly called, The Newfoundland White Spruce Fir.

6. ABIES *taxi foliis*, odora, Balsami Gileadensis. Raii. Hist. App. The Balm of Gilead Fir.

7. ABIES *orientalis*, folio brevi & tetragono, fructu minimo, deorsum inflexo. T. Eastern Fir Tree, with short square Leaves, and small Fruit hanging downward.

8. ABIES *major Sinensis*, pectinatis *taxi foliis* subtilis, conis grandioribus sursum rigentibus, foliorum & squamarum apiculis spinosis. Pluk. Almatb. Great Fir Tree of China, with Yew Leaves, large Cones growing upright, and the Points of the Leaves prickly.

9. ABIES *maxima Sinensis*, pectinatis *taxi foliis*, apiculis non spinosis. Pluk. Almatb. Greatest China Fir Tree with Yew Leaves not prickly at their Points.

A B I

The 1st and 2d Sorts of Fir are very common in most Gardens, and Plantations of ever-green Trees.

The 1st grows in great Plenty about Strasburg, and some other Parts of Germany; from whence the Turpentine is brought to England. But the most beautiful of these Trees are growing upon Mount Olympus, from whence I have received Cones, which were upwards of a Foot in Length. Dr. Tournefort, in his Travels mentions the Firs of Mount Olympus as the most beautiful Trees in the Levant.

The 2d Sort which is very common in the Woods of Norway is the Tree that affords the white Deal, and grows in the Valleys where the Soil is very deep.

There are two or three Varieties of this Species, greatly differing in the Length and Colour of their Leaves, as also in the Size of their Cones, one of which has been distinguished by Nursery Gardeners, under the Title of Long Coned Cornish Fir. The Leaves of this are whiter, and much longer than the others; the Cones are also of a greater Length than those of the common Sort, so that by the Appearance of the Trees, any Person might suppose them to be a distinct Species. But from the Seeds which were carefully taken from this Sort, both Varieties of Plants have risen, therefore they must be only deemed Varieties. There is also a 3d Variety, whose Leaves are smaller and shorter than the common Fir. The seeds of this have been sent to England from the Northern Parts of America, but as the Trees advance in Growth, they approach so nearly to the common Sort, as not to be distinguished; it may be presumed therefore that they are the same.

From this Tree the Pitch is drawn, and hence it had the Title of the *Picea*, or *Pitch Tree*.

The 3d Sort was formerly growing in the Bishop of London's Garden at Fulham; and of late Years there has been a great Number of the Trees raised from the Cones which have been brought from America. This Sort is very hardy in respect to Cold; but it should have a moist Soil; for in dry land it makes very little Progress. It never grows to be a very large Tree in its native Soil, but shoots its Branches out horizontally to a great Distance, and is not so beautiful as the other Firs; the Leaves growing but thinly upon the Branches, and having so much the Resemblance of those of the Yew, that at a small Distance they are not easily distinguished from that Tree, even by Persons of Skill.

The 4th Sort is a Native of North America, from whence

whence the seeds have been brought to *England*, and great Numbers of the Plants raised. This is called by the Inhabitants in *America*, the *Black Spruce Fir*, probably from the Colour of the Bark, for the Leaves are not of a darker Colour than those of the White. It grows naturally in Swamps and Bogs, and never becomes a very large Tree.

The 5th Sort is a Native of the same Country; but it grows naturally on the Mountains and higher Lands, and arrives to a much greater Size than the former. The Leaves of both these Trees are by the Inhabitants of *America* used indifferently for the making of *Spruce Beer*, from whence they had the Appellation of *Spruce Tree*. There were many Years ago some Plants of this Sort growing in the Gardens of the Bishop of London at Fulham, in those of Mr. Reynolds at Hillendon near Uxbridge, and Mr. Darby Gardener at Hoxton, but these have been long destroyed; so that in the Gardens near London, there are not any of these Trees which are much above thirty Years Growth. Those in the elegant Gardens of his Grace the Duke of Argyle, at Whittington near Hounslow, are by much the finest I have seen. But there must be some Trees of a greater Age in *Devonshire*, unless they have been destroyed: for in the Year 1724, I received some Branches of this Tree full of Cones, from a Gentleman of that Country, who had several of the Trees then growing, which were of a considerable Size. These had been raised from Seeds brought from *Newfoundland*, from whence there has been of late Years a great Number of the Cones brought to *England*, some of which were called *Red Spruce*; but the Plants which have been raised from the Seeds, are so like those of the Black, as not to be distinguished from it; nor can I perceive any Difference in their Cones, so that it may be supposed they are the same.

From both these Species of Fir, exudes a fine clear Turpentine of a strong Scent, which the Native *Indians* use to cure green Wounds, and also for some internal Disorders: and of late Years the *English* Physicians in *North America*, have likewise adopted it into their Practice.

The 6th Sort is a Native of *America*, from whence the Seeds have been brought into *Europe*. This Tree abounds with a clear fragrant Turpentine, commonly sold in *England* for the Balm of *Gilead*; and from hence the Title of Balm of *Gilead* has been given to this Species of Fir, tho' the Tree from whence the true Balm of *Gilead* is taken, is near of kin to the *Terebinthus* or *Pistachia-nut*.

This Sort of Fir, while young, is the most beautiful of any of the Kinds yet known; but in almost all the Places where these Trees have been planted, they have not continued fair above ten or twelve Years; and where they have thriven most while young, there they have soonest decayed. The first Appearance of their Decay is, their producing a great Number of Cones, and Male Flowers; soon after which, their leading Shoot turns crooked, and a great Quantity of Turpentine runs down their Stems; then their Leaves fall off, and, in a year or two, they die. This sudden Decay of the Trees has brought them into Disrepute, so that few Persons at present care to plant them; for the same has happened in most Soils and

Situations; nor have I seen any free from this Accident, except at his Grace the Duke of Bedford's at *Woburn-Abbey*; where, in that noble Plantation of ever-green Trees, are Numbers of this Sort of considerable Growth which yet remain in good Health. The Soil in which these are planted, is a deep Sand, so that their roots may strike deep, without meeting any Obstruction, to which the present Vigour of the Trees is imputed.

The 7th Sort was discovered in the *Levant* by Dr. Tournefort, who sent the Cones to the royal Garden at *Paris*. This Kind of Fir is very common in the Mountains of the *Archipelago*, from whence the Cones may be easily procured. It has also been found in *Istria* and *Dalmatia*; and it may probably grow in many other Places.

The other two Sorts are very common in *China*, from whence I have received Seeds and Branches of both Kinds; but the Seeds, having been taken out of their Cones before they were brought over, were dried up, and lost their Germ, so that none of them grew: whoever, therefore, is desirous to propagate any of the coniferous Trees, should have the Cones gathered when ripe, before they open and let out the Seeds, in which they will continue fresh a long Time. Whereas if the Seeds are taken out of the Cones, they will not retain their growing Quality, so as to be transported from one Country to another, at any considerable Distance.

These Sorts are, at present, very rare in *England*: the 8th was formerly growing in the Garden of Mr. Edward Morgan in *Westminster*, a Branch of which was given Mr. Ray by Mr. Doody, a very curious Botanist; but this Tree has been destroyed many Years ago. The Leaves of it are much longer than those of any other Kind of Fir yet known; but as there have not been any Cones of these Trees brought into *England*, I know not how they differ from those of the other Sorts in this respect. The Seeds indeed, which I have received, were larger than those of any other Fir I have yet seen.

These Trees are all raised from Seeds taken out of their polyspermous Cones. The way to get out the Seeds is, by exposing the Cones to a gentle Fire, which will cause their squamous Cells to open, and readily emit their Seeds: But they should not be exposed to too great a Heat. This ought not to be done until you are ready to sow them; which is best performed in the latter End of *March*.

These Plants should be all raised in a Nursery, where they may be protected from the Birds; otherwise they will be in Danger of being destroyed when they first come up. For as they bring up the Husk of the Seed on the Top of the Plant, the Birds in picking off the Husk will break off the Tops of the Plants, whereby a whole Bed may be lost in a few Hours, if not carefully guarded from them.

The best Time for sowing these Seeds is about the latter End of *March*, or the Beginning of *April*, according as the Season is more or less forward, on a Bed of light Earth, covering the Seeds about half an Inch deep with the same Sort of Mould. If this Bed be netted over to keep off the Birds, it will be a sure Method of preventing them from destroying the young Plants at their first coming out of the Ground; at which

which Time they should likewise be screened from the Sun in the Middle of the Day, by covering the Beds with Mats; because too much Sun frequently destroys these Plants when they are young. In this Bed the Plants should remain until the following Spring; when there should be a Number of Beds prepared in the Nursery to receive those Seedlings; and in the Beginning of *April* they should be transplanted into the Beds, at the Distance of six Inches Row from Row, and in the Rows at three Inches asunder, setting them in a Quincunx Order. In removing these Plants, they should be very carefully raised up with a Trowel, so as not to break off the Fibres of their Roots; and they should be kept as little Time out of the Ground as possible. During the Time too they are out, their Roots should be covered, to prevent the Wind from drying their Fibres; and in planting, the Earth should be pressed close to their Roots, to prevent the Air from penetrating to them. If the Season proves dry, it will be proper to water the Plants every Week one or twice, according to the Warmth of the Weather; and the Beds should be covered with Mats, to screen the Plants from the Sun, and drying Winds, until they have taken good Root; after which Time they will require little farther Care, than to keep them clear from Weeds. In these Beds the Plants may remain two Years; at the End of which they should be transplanted into an open Spot of Ground; for their Roots will in that Time meet quite over the Beds. This Ground should be well trenched and cleared from all noxious Weeds, and made level to receive the Plants, which should be transplanted about the Beginning of *April*, just before they begin to shoot; and if the Weather prove moist, it will be of great Advantage to the growing of the Plants. In removing them out of the Beds, great Care should be taken, not to tear off or injure their Roots; nor should too many of the Plants be taken up at one Time; but rather plant them as fast as they are taken up, that they may be as little Time out of the Ground as possible. For the drying Winds, which usually happen at this Season, will greatly injure the Roots of these Plants, if much exposed thereto.

The Distance at which they should be placed in the Nursery, should be four Feet Row from Row, and in the Rows two Feet asunder. This Distance may by some be thought too great; but if it be considered how much their Roots spread in the Ground, as also that when they are planted nearer together, it will be very difficult to take up the Plants again without cutting and tearing off their Roots, especially if they are not all taken up clean at the same Time; these Considerations must have greater Weight than that of the Loss of a little Ground, with all who have any Regard to the future Welfare of the Plants. In planting them, it will be advisable to draw a Line cross the Ground, and to dig out a Trench of a Foot wide thereby, into which the Plants may be placed at the Distance of two Feet asunder. Then fill up the Earth into the Trench, covering the Roots of the Plants with the finest part of it, and scattering it carefully between the Roots; and when the whole Trench is filled in, press the Earth gently down with your Feet; but by no means tread it too hard, especially if the Ground be strong, or apt to bind too close.

When the Plants are thus set, if the Season should prove dry, they ought to be watered, in order to settle the Earth to their roots; and, if this be repeated three or four Times (if the Season should continue dry) it will greatly promote their taking new Root, and secure them from the Injuries of the drying Winds.

In this Nursery the Plants may remain two or three Years, according to the Progress they shall have made; and during this Time, the Ground between the Plants should be constantly kept clean from Weeds, and dug between the Rows every Spring; in doing of which, Care must be taken not to cut or injure the Roots of the Plants: This is all the Culture they will require during their Continuance in the Nursery. When transplanted into the Places where they are to remain, the necessary Care to be taken is, in taking them up, not to injure or cut off their Roots, and to let them be as little Time out of the Ground as possible; and when they are out, in particular, to guard their Roots from the drying Winds. The surest Time for removing these Trees is about the Beginning of *April*. For though they may be, and often are, removed with Success at *Michaelmas*, yet the Spring is the more sure Season, especially in moist Land.

Most of the Kinds of Firs may be removed at the Height of six or seven Feet; but those of two Feet high are much better, and will in a few Years gain the Ascendant of those taller Trees: I would not therefore, advise the transplanting of these Trees when they are much above two Feet high, especially if they have stood long in the Nursery unremoved. For then their Roots will have extended themselves to a great Distance, which will be cut in taking them out of the Ground; and where great Amputation is used either to the Roots or Branches of these Trees, the Quantity of Turpentine, which commonly issues from the Wounds, will greatly weaken the Trees. There is another Advantage also in planting them when small, which is that of not requiring Staking to secure them from being blown down by strong Winds, which in tall Trees is a great Trouble and Expence. And whoever will give themselves the Pains to observe, how much Trees of two Feet high exceed in Growth those which are removed at a much greater Height, will, I am sure, be convinced of the Truth of what is here said.

These Trees are chiefly cultivated for ever-green Plantations in Gardens and Parks, where by their perpetual Verdure, they have a pretty effect in Winter; and in Summer, are not without their Beauty, by the Contrast in the different Shades of Green between them and the other Trees. But as neither of these Sorts of Fir are equal to the *Scotch Pine* in the Goodness of the Timber; they are not so profitable for large Plantations, which are designed for Improvement more than Beauty.

The common Spruce Fir is what the white Deals are cut from. These Trees grow in the deep strong Soils of *Norway* and *Denmark*; and will grow likewise in almost any Soil or Situation in *England*, provided it be not within the Reach of the Smoke of great Cities, which is very injurious to all these Sorts of Trees; nor do they thrive near so well in dunged Land, as in fresh

uncultivated Soils. The disrepute these Trees have been under for some Years past, has been occasioned by their being planted too close together, or too near other Trees, whereby the Air has been excluded from their Branches, which has occasioned most of their under Branches to decay, so that when viewed from the Ground under their Branches, they have a greater Appearance of dead than living Trees. But where they have been allowed a good Distance, and planted in a strong fresh Soil, they have had their Branches quite fresh within six or eight Feet of the Ground, and that too, in Trees upward of sixty Feet high. These Trees therefore, should not be planted nearer than twelve Feet apart; nor should they be so near where the Plantation is more than three Rows deep. In this Case, eighteen or twenty Feet asunder will be full near enough, especially where the Trees are designed to have their Branches feathered near the Ground, in which one of the Beauties of these Trees consists.

The Silver Fir requires a stronger Land than the Spruce; for in dry Ground they seldom make any great Progress; and many Times, even after they have arrived to a considerable Size, are destroyed by very dry Seasons, where the Soil is shallow, or too dry. But when they are planted in a proper Soil, they grow to a very large Size, and are extremely beautiful, having the under Side of their Leaves white, and the upper Side of a dark green Colour.

This Sort of Fir, however, is frequently injured by Frosts, when they happen late in the Spring, especially while the Plants are young. For when these are planted in a warm Situation, they are apt to shoot pretty early, and if any sharp Frosts happen after they have pushed, the young shoots are killed, so that they lose a Year's Growth, and are rendered so very unsightly, that many times they have been pulled up and thrown away. In cold Situations, however, where they do not begin to shoot so early, they are not subject to this Disaster; and in many such Places, these Trees grow to a large Size. I have sometimes seen some fine Trees of this Sort of Fir, which grew upon natural Bogs, where, by extending their Roots, they had drained the Ground to a considerable Distance round them. There are some Trees of this Kind now growing in England, which are upwards of ninety Feet high.

The Directions before given are for the Culture of the common Spruce and Silver Firs, for the other Sorts will require a different Treatment, which we shall next particularly mention, and if properly observed, there will be no Doubt of Success, provided the Seeds are good, for the Author has frequently made Trial of it to Advantage.

About the Middle, or latter End of March (according to the Forwardness of the Season, by which every Person must be guided) make a gentle hot Bed, in Length proportional to the Quantity of Seeds to be sown, and where there are Frames which can be spared for this Purpose, these may be placed upon the hot Bed; but where these are wanting, the Bed should be cradled over with Hoops, that they may be covered with Mats or Canvass; then plunge the Bed full of halfpenny Pots. These Pots should be filled with light undunged Earth, and the Interstices between the Pots may

be filled up with any other Earth which is nearest to the Place; then sow the Seeds in the Pots, covering them about Half an Inch with the same light Earth. After this the Bed must be covered with Glasses: where they are under Frames, or in the other Case, either with Mats or Canvass; and where they have Glasses, these should be tilted up every Day to admit fresh Air, and when there is much Sun, the Glasses should be covered in the Heat of the Day to shade the Bed. This will prevent the Earth from drying too fast, which would prove hurtful to the Seeds; nor should the Seeds have too much Wet, which would be equally injurious to them: Therefore the earth should be but seldom watered, and it must never be given in great Quantities. With this Management the Plants will appear in five or six Weeks Time, when they must be carefully guarded from Birds, as was before directed for the Common Sorts, and also screened from the Sun in the Middle of the Day; but they must now have fresh Air admitted to them at all times when the Weather will permit. They may also be allowed to receive any gentle Showers of Rain, but they should not have too great Plenty of Moisture, which will frequently rot the tender Stems of the Plants, and cause them to drop. Upon the judicious Care of this, depends the whole success; for I have frequently seen great Numbers of these Plants destroyed in one Day, by being either too much exposed to the sun, or from having too much Wet.

It may, perhaps, seem strange to many, that I should direct the Sowing the Seeds of these Trees which are so very hardy upon a hot Bed; but from many Trials, I have always found they have succeeded much better this Way, than in any other; for the gentle Warmth of the Bed will not only cause the Seeds to vegetate much sooner than they would naturally do in the cold Ground, but the Plants will also rise much stronger, and, consequently, be in less Danger of rotting in their Shanks. And as the Warmth of the Bed is only to bring up the Plants, so there should be but little Dung employed in making it; for after the Plants are up, they must be inured to the open Air, and treated as hardly as the common Sorts.

There may be others, perhaps, who will object to the Directions given for sowing the Seeds in such small Pots, because, where there is any Quantity of the Seeds, it is usual to sow them in Boxes, or large Pots, but I can from many Years Experience aver, that most Sorts of Seeds succeed better when sown in small Pots, than in Boxes, or larger ones, and therefore recommend this Practice.

As the Seeds of the Hemlock Fir will frequently remain in the Ground four or five Months, so the Pots, in which they are sown, should not be disturbed, if the Plants come not up as soon as may be expected; for unless, upon stirring the Ground, the Seeds are found to be decayed, there may be Hopes of their growing the second Spring; for I have sometimes had the Seeds remain a whole Year in the Ground, and afterwards come up very well; this Caution is given to prevent the Pots from being too hastily turned out.

The Plants of these Sorts of Fir must be afterwards treated in the same Way as the common Sorts, with this Difference only, that they ought to be transplanted into

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a more shady Situation, and moister Soil. For while these Plants are young, they will not thrive if they are much exposed to the Sun, or in a dry Soil; but when they have obtained Strength, they will bear the open Sun very well, and in a moist Soil will make a great Progress, whereas in dry Ground they frequently stint, and produce Plenty of Male Flowers and Cones, by the Time they get to the Height of four or five Feet.

The two American Spruce, and the Balm of Gilead Firs, are by much the most beautiful Sorts yet known, their Branches being more closely garnished with Leaves placed on every Side of them, and of a brighter Green than the common Sorts; consequently they are better adapted for such Plantations as are much in Sight. Dr. Linnaeus has supposed these to be only Varieties of the common Spruce and Silver Firs, but whoever has examined their Branches and Cones, can have no Doubt of their being distinct Species; nor have I ever observed them to vary, the Seeds always producing the same Kind of Fir, as the parent Tree from whence they are taken. As these are all Natives of America, where neither of the European Kinds are found growing naturally, we may be assured they are a distinct Species.

The Scotch Fir (as it is usually called) being a Pine, I shall refer that to its proper Genus of *Pinus*; under which Article all the several Sorts of European and American Pines are comprised; and as their Culture is somewhat different from that of the Fir, the Method of propagating them will be there fully described.

The Seeds of all Sorts of Firs are easily taken out of their Cones, which are of a much looser Texture than the Cones of the Pines; but as these so easily open with Heat, the Seeds generally drop out in hot Weather, and are thereby spoiled from growing soon after. The Cones of the Silver and Balm of Gilead Firs also, fall to pieces on the Trees, if not gathered by the Middle, or End of October, whereby all their Seeds will be lost; whoever, therefore is desirous of saving their Seeds, should carefully watch the Time of their ripening.

When the Branches of these Trees are cut off, to trim them up to have Stems, it should be done gradually, never cutting more than two Tier of Branches in one Year; for if too many Wounds are made at the same Time on these resinous Trees, the Turpentine will issue out in such Quantities as to weaken and check the Growth of them. The best Time for pruning these Trees is in September; at which Time they abound not so much in Turpentine as in the Spring; and, consequently, do not bleed much. What flows too out at that Season, is seldom more than necessary for covering the Wounds, to prevent the Wet and Cold of the succeeding Winter from penetrating the wounded Parts. These Branches should be cut close to the Trunk.

ABROTANUM, or Southernwood.

This Plant is better known by its outward Appearance, than by any distinct Characters which can be given of it, agreeing in most Parts with the Wormwood, from which it is not easily separated. As it has been distinguished, however, from that Plant by all the ancient Botanists, and the English Name of Southernwood being well known, I shall continue this Distinction, to avoid confounding those Readers who are less acquainted with botanical Niceties.

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The Species are,

1. ABROTANUM *mas angustifolium majus*. C. B. P. Greatest narrow leaved Southernwood.

2. ABROTANUM *latifolium inodorum*. C. B. P. Broad leaved Southernwood without Scent.

3. ABROTANUM *mas angustifolium incanum*. C. B. P. Hoary narrow leaved Southernwood.

4. ABROTANUM *campestre, cauliculis albicantibus*. Fine leaved wild Southernwood, with whitish Stalks.

5. ABROTANUM *campestre, cauliculis rubentibus*. C. B. P. Fine leaved wild Southernwood, with reddish Stalks.

6. ABROTANUM *campestri simile Tingitanum*. H. L. Tangier Southernwood, resembling the wild Sort.

7. ABROTANUM *campestre incanum, carlinæ odore*, C. B. P. Hoary Field Southernwood, with a Smell like the Carline Thistle.

8. ABROTANUM *humile, corymbis majoribus aureis*. H. R. Par. Dwarf Southernwood, with large golden Flowers.

9. ABROTANUM *Hispanicum, absinthii Pontici folio*. Tourn. Spanish Southernwood, with a Pontic Wormwood Leaf.

10. ABROTANUM *Hispanicum maritimum, folio crasso splendente & rigido*. Tourn. Spanish Sea Southernwood, with a thick shining stiff Leaf.

11. ABROTANUM *mas ex Surinam, molli hirsutie canescens*. P. A. Hoary Male Southernwood from Surinam.

12. ABROTANUM *elatius subincanum, foliis creberrimis, secundum caulem in metæ formam fastigiatis*, Pluk. Almag. Taller hoary Southernwood, with frequent Leaves gathered into a kind of Pyramid.

13. ABROTANUM *orientale annuum, absinthii minoris folio*. Tourn. Cor. Annual Eastern Southernwood, with a Leaf of the lesser Wormwood.

14. ABROTANUM *orientale, chamæmeli folio*. Tourn. Cor. Eastern Southernwood, with a Camomile Leaf.

15. ABROTANUM *Africanum, foliis argenteis angustis, floribus spicatis, capitulis copioso tomento donatis*, D. Sber. R. S. African Southernwood, with narrow silver Leaves, spiked Flowers, and very woolly Heads.

16. ABROTANUM *Africanum, foliis argenteis angustis, floribus umbellatis, capitulis tomentosis*. Raii Sup. African Southernwood, with narrow silver Leaves, umbelated Flowers, and woolly Heads.

The 1st, 2d, 3d, 4th, and 5th Sorts may be propagated by Slips, or Cuttings, planted the latter End of March, or the Beginning of April, on a Bed of fresh light Earth, observing to water them, until they have taken root, two or three times a Week, provided the Season proves dry; and if they are shaded in the Middle of the Day, it will promote their taking Root.

The 1st Sort is commonly propagated by the Gardeners near London, to furnish the Balconies and little Courts of the Citizens; for which Purpose this Plant is well adapted, as it endures the Smoke of London better than most other Plants; and the Leaves, when bruised, emit an agreeable Odour. This Sort was formerly used in Medicine, but of late has been expelled the Shops.

This is by Dr. Linnaeus styled *Artemisia foliis ramossissimis setaceis caule erecto fruticoso*, i. e. Mugwort with stiff branching Leaves, and an upright woody Stalk.

The 2d and 3d Sorts are at present more rare in the English

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Englisb Gardens, though equally hardy with the other; and may be planted for under Shrubs, in Quarters of low growing Trees, where, by the Diversity of their Leaves, they will afford an agreeable Variety.

The 4th and 5th Sorts grow commonly in *Germany*, *Italy*, and *Narbonne*, by Way-sides, and in barren Places; and are also found in *England* by the Way-side from *New-market* to *Lynn*, near a Village called *Elden*. These seem to be but Varieties from each other, and only differ in the Colour of their Stalks. They are seldom preserved in Gardens, unless by Botanists for Variety. Whoever is desirous to have these Plants, may easily obtain them from the Places of their Growth, either the Plants, or the Seeds; but the Seeds should be sown soon after they are ripe; for being very light, will lose their growing Quality, if kept long out of the Ground. These Plants seldom continue above three or four Years, when transplanted into Gardens, so that new ones should be raised from Seed to succeed them.

The 6th Sort is not so hardy as any of the former; for, being a Native of warm Countries, it requires to be sheltered in Winter from the Frost. This may be propagated as the former; but should be kept in Pots, that they may be placed under a Frame in Winter, where they should have as much free Air as possible in mild Weather; but in hard Frosts they ought to be covered with Glasses and Mats to secure them.

The 7th Sort should be treated in the same manner as the 4th or 5th, and is equally hardy. These will continue much longer on a dry barren Soil, than when they are planted in a rich Garden Earth.

The 8th, 9th, 10th, and 14th Sorts may be propagated by Seeds, or from Slips and Cuttings: if from Seeds, they should be sown on a warm Border of dry Earth early in the Spring; and when the Plants are come up, they must be constantly kept clear from Weeds. When the Plants are about four inches high, some of them may be removed into Pots, that they may be placed under Shelter in the Winter; and the rest may be transplanted into a warm Border, observing to shade and water them until they have taken new Root; after which time, they will require no farther Care, but to keep them as before, clear from Weeds. These Plants are sometimes destroyed by severe Frosts, while they are young; but afterwards they will endure the Cold of our ordinary Winters extremely well, especially if planted on a dry lean Soil. If you propagate these by Slips or Cuttings, they must be treated in the same manner as hath been directed for the common Sort.

The 11th and 12th Sorts are tenderer than any of the beforementioned. These may be propagated either by Seeds, or from Slips, as the former: but they must be kept in Pots, and require a good Green-house in Winter, where they should be permitted to enjoy as much free Air as possible in mild Weather.

The 13th Sort is an annual Plant, which rarely produces good Seeds in this Country. The surest Method, however, of obtaining good Seeds is, to raise the Plants towards the latter End of Summer, and preserve them through the Winter, which will cause them to flower early the following Summer, so that

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they will have time to perfect their Seeds; whereas those which are raised in the Spring, will flower late in Autumn, and the cold Weather will come on before their Seeds have time to ripen.

The 15th and 16th Sorts rarely produce good Seeds in *Europe*; but may be easily propagated by Cuttings or Slips, which should be planted in Pots filled with light fresh Earth, and plunged into a very moderate Hot-bed, observing to water and shade them until they have taken Root; after which they ought to be inured, by degrees, to bear the open Air; then they are to be taken out, and placed where they may have the Morning Sun, and be sheltered at the same time from the strong Winds. In this Situation they are to remain till *October*, when they ought to be removed into the Green-house, and placed where they may enjoy as much free Air as possible in mild Weather, failing not frequently to refresh them with Water; Care must be also taken to secure them from the Frost, otherwise they will be destroyed.

ABROTANUM FEMINA. See *Santolina*.

ABSINTHIUM, Wormwood.

The Characters are,

There are many female and hermaphrodite Flowers included in the same scaly Empalement: The hermaphrodite Flowers occupy the Middle: These are tubulous, consisting of one Leaf, which is divided into five Parts at the Top. The female Flowers are ranged round the Border. The Difference in the Characters of this and the Southernwood is very small, the only Distinction between them is, that the Empalement of the Wormwood is more globular than that of the Southernwood, and the Seeds have small Hairs fixed to their Bottom.

The Species are,

1. ABSINTHIUM vulgare majus. J. B. Common Wormwood.
2. ABSINTHIUM Ponticum tenuifolium incanum. C. B. Pin. True Roman Wormwood.
3. ABSINTHIUM maritimum, lavendula folio. C. B. Pin. Sea Wormwood, with Leaves like Lavender.
4. ABSINTHIUM insipidum, absinthio vulgari simile. C. B. Pin. The insipid Wormwood is so like the common, as not easily to be distinguished from it, but by smelling and tasting the Herb: this Sort is not common in *England*.
5. ABSINTHIUM arborescens. L. I. Tree Wormwood.
6. ABSINTHIUM Ponticum mantanum. C. B. P. Common mountain Wormwood.
7. ABSINTHIUM Ponticum Creticum, grati odoris. C. B. P. Candy Pontic Wormwood, of a pleasant Smell.
8. ABSINTHIUM Ponticum tenuifolium, caulibus purpurascens, foliis supina parte viridioribus. C. B. P. Narrow-leav'd Pontic Wormwood, with purplish Stalks, and Leaves greener on the Under-side.
9. ABSINTHIUM Ponticum tenuifolium Austriacum. C. B. P. Austrian Wormwood.
10. ABSINTHIUM Ponticum repens vel supinum. C. B. P. Creeping Pontic Wormwood.
11. ABSINTHIUM maritimum, foliis superioribus in aliquot lacinias divisis. C. B. P. Sea Wormwood, with the upper Leaves divided into some Jags.
12. ABSINTHIUM Serpybium Germanicum. C. B. P. German Sea-Wormwood.

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13. *ABSINTHIUM Seriphium Belgicum*. C. B. P. *Belgic Sea Wormwood*.

14. *ABSINTHIUM maritimum*, *Seriphio Belgico simile*, *latiore folio*, *odori grati*. Pluk. *Sea Wormwood*, resembling the *Belgic Wormwood*, with a broader Leaf, and a pleasant Smell.

15. *ABSINTHIUM Seriphium Gallicum*. C. B. P. *French Sea Wormwood*.

16. *ABSINTHIUM Sanctonicum Gallicum*. C. B. P. *French Wormwood*.

17. *ABSINTHIUM Seriphium montanum candidum*. C. B. P. *White Mountain Wormwood*.

18. *ABSINTHIUM Alpinum incanum*. C. B. P. *Hoary Wormwood of the Alps*.

19. *ABSINTHIUM Alpinum candidum humile*. C. B. P. *Dwarf white Wormwood of the Alps*.

20. *ABSINTHIUM Seriphium Hispanicum*, *flore oblongo*. Tourn. *Spanish Wormwood* with an oblong Flower.

21. *ABSINTHIUM Halepense*, *grati odoris*, *comâ delicatiore*. Pluk. *Wormwood of Aleppo*, of a pleasant Smell, with a delicate Spike.

22. *ABSINTHIUM Africanum arborescens*, *folio vermiculata incano*. Oldenl. *African Tree Wormwood*, with a hoary vermiculated Leaf.

23. *ABSINTHIUM Africanum spicatum*, *foliis tenuissimis brevissimis integris*. D. Sherard. Raii Supp. *Spiked African Wormwood*, with narrow short entire Leaves.

24. *ABSINTHIUM maritimum nostras*. D. Preston. Raii Supp. *Scotch Sea Wormwood*.

25. *ABSINTHIUM orientale fruticosum incanum*, *amplo folio tenuissimè diviso*. Tourn. Cor. *Shrubby Eastern Wormwood*, with large hoary Leaves finely divided.

26. *ABSINTHIUM orientale incanum*, *capillaceo folio*, *floribus in capitulum congestis*. Tourn. Cor. *Hoary Eastern Wormwood*, with a capillaceous Leaf, and Flowers collected into a Head.

27. *ABSINTHIUM orientale incanum tenuifolium*, *floribus luteis in capitulum congestis*, & *sursum spectantibus*, *Hoary narrow leaved Eastern Wormwood*, with yellow Flowers collected into a Head, and looking upward.

28. *ABSINTHIUM orientale incanum*, *tanacetii folio*, *inodorum*. Tourn. Cor. *Hoary Eastern Wormwood*, with a Tanfy Leaf, without Smell.

29. *ABSINTHIUM orientale tenuifolium argenteum* & *sericum*, *flore magno*. Tourn. Cor. *Eastern Wormwood*, with narrow silver coloured filkeh Leaves.

30. *ABSINTHIUM orientale vulgari simile*, *sed longè minus amarum*. Tourn. Cor. *Eastern Wormwood*, like the common, but far less bitter.

31. *ABSINTHIUM orientale tenuifolium incanum*, *odore lavendulæ*, & *insipidum*. Tourn. Cor. *Hoary narrow leaved Eastern Wormwood*, with a Lavender Smell, and insipid.

32. *ABSINTHIUM orientale tenuifolium incanum*, *lavendulæ odore*, & *amarum*, *flore deorsum spectante*. Tourn. Cor. *Hoary narrow leaved Eastern Wormwood*, with a Lavender Smell, and bitter, with the Flower hanging down.

33. *ABSINTHIUM tanacetii folio odoratissimum*. Am. *Wormwood* with a Tanfy Leaf, very sweet scented.

This is an annual Plant which was found in *Siberia*, and the Seeds were sent from thence to the Imperial Garden at *Petersburgh*, where the Plants produced good Seeds, some of which were sent me by the late Dr. *Annen* the Professor, which have succeeded in the *Cbel-*

sea Garden. It is a biennial Plant, which rises much better from the self sown Seeds, than when sown by Hand. The Plants which come up in Autumn, will flower the Summer following in *July*, and the Seeds ripen in *August*. It grows to near three Feet high, and the whole Plant hath a very strong Odour.

The 1st of these Sorts is very common in *England*, in the Roads, and upon *Dunghills*; it is also planted in Gardens for common Use. It may be propagated by Slips, in *March* or *October*; or may be raised from Seeds, which should be sown soon after they are ripe.

The 2d Sort is the true *Roman Wormwood*, which is recommended in many Dispensatories to be used in Medicine, but the common *Sea Wormwood* is now generally substituted in its room. It hath Leaves which are finely cut into many narrow Segments, and very white on their under Side: The Flowers are produced on slender Spikes, which come out from the Wings of the Leaves. These are small, and hang downward, each being composed of many hermaphrodite Flowers, included in one common Empalement, and of a pale yellow Colour. These appear about the End of *August*, or the Beginning of *September*, but the Seeds rarely ripen in *England*. The Plants however creep greatly by their Roots, so that when planted in a Garden, they multiply too fast, unless their Roots are every Year retrenched.

The 3d and 11th Sorts are very like each other, and differ only in this, viz. the upper Leaves of the 11th are divided into many Parts, whereas all those of the 3d are entire; whether these be only accidental Differences arising from the same Seeds, I cannot pretend to determine, having never raised either of these Species from Seeds; but thus far I can say, that the Plants which are propagated from either, always remain the same as their Parent Plants.

The Tree Wormwood rises to be a Shrub five or six Feet high, and is kept in Gardens as a Rarity. It was formerly preserved in Green-houses; but hath been found hardy enough to endure our common Winters abroad, if planted in Places sheltered from the Northern Winds. This shrub makes an agreeable Variety in small Quarters of Ever-greens, or flowering shrubs. The hoary Leaves, which continue all the Year fresh, strike the eye at a great Distance, and have a good Effect in diversifying the Plantations: This shrub is easily raised from Cuttings planted in any of the Summer Months (under a Hedge or Wall), where they may have only the Morning Sun; and being frequently watered, will take Root in a Month or six Weeks time, when they may be removed to any Places where they are designed to remain; observing, however, in this (as well as in many other Shrubs and Plants which are Natives of a warmer Climate), to place them always in a dry Situation: Wet, especially in Winter, being absolute Destruction to all these Sorts of Plants; of which one or two should be constantly sheltered in Winter, lest those in the open Air should be destroyed.

The 25th Sort, being a Shrub, must be propagated by Cuttings, after the manner directed for the 5th Sort. These must be kept in Pots, that they may be removed into the Green-house in Winter, because in very severe Frost they are often destroyed; though

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in mild Winters they will live in the open Air, provided they are planted on a dry Soil, and in a warm Situation.

The 6th, 7th, 8th, 9th, 10th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, and 20th Sorts, are all low Plants, which multiply very fast by their creeping Roots; so that if once planted in a Garden, they will thrive fast enough. Many of these grow near the Sea, and some of them very plentifully on the British Coast, and others on the Sea Shore in France and Spain; but they are all of them hardy, so will live in the open Air in England; but as they are Plants of little Beauty, are seldom admitted into Gardens, except where they are allowed a Place for the Sake of Variety.

They are easily propagated by parting their Roots, which may be done either in Spring or Autumn; and if they have an open Exposure, they will thrive in any Soil, unless under the Shade of Trees, where they never do well.

The 22d and 23d Sorts are Natives of the Cape of Good Hope. These may also be propagated by planting either Cuttings or Slips in any of the Summer Months, observing to water and shade them until they have taken Root. Then they may be placed abroad among other Exotic Plants, where they may remain till October, when they must be removed into the Green-house, and placed with Myrtles, and other hardy Plants, which require a large Share of free Air in mild Weather, and only want Protection from severe Frosts. They require to be frequently watered in mild Weather, and should have a light fresh Soil. The 22d Sort will rise to the Height of seven or eight Feet; but the 23d is an humble Plant. These seldom produce Seeds in Europe.

There is a great Variety of the Sea Wormwoods, growing plentifully on the salt Marthes, in divers Parts of England, which are indifferently gathered, and brought to the Markets, and sold for the Roman Wormwood; from which they differ greatly in the Colour of their Leaves, as also in their Taste and Smell. By many Persons, however, the Sea Wormwoods are preferred to the true Roman Wormwood, as having a stronger and more grateful Scent; though the Roman Wormwood is thought to be less nauseous to the Stomach.

ABRUS. See Glycine.

ABUTILON [the Name is Arabic], yellow Mallow. The Characters of this Genus are,

It has a single angular Emplacement which is permanent, and divided into five Parts at the Top. The Flower consists of five Petals, joined at their Base. In the Center arise many Stamina, coalescing at the Bottom to the Style, and forming a Sort of Column, which rests upon a round Germen. After the Flower is past, the Germen turns to a round or angular Seed Vessel, having several Cells opening lengthwise, and filled with Seeds, which in some Species are shaped like a Kidney, and in others round.

The Species are,

1. ABUTILON. Dod. The common Yellow Mallow.
2. ABUTILON Indicum. J. B. Indian Yellow Mallow.
3. ABUTILON Carolinianum reptans, alcea foliis, gilvo flore. Ait. Phil. The Carolina Abutilon, with Leaves like the Vervain Mallow.
4. ABUTILON Americanum, amplissimo folio, caule villosa. Flum. The large leaved American Abutilon, with woolly Stalks.

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5. ABUTILON Americanum, fructu subrotundo, pendulo, & capsulis vesicariis crispis conflato. Rand. The American Abutilon, with roundish pendulous Fruit, whose Seed Vessel is like a swelled Bladder.

6. ABUTILON alboides, flore carneo, fructu globoso. H. E. Shrubby Abutilon, with the Appearance of Marsh-mallow, a Flesh-coloured Flower, and round Fruit.

7. ABUTILON periploca acutioris folio, fructu stellato. Hortb. Eltb. p. 4. Abutilon, with a pointed Periploca Leaf, and a starry Fruit.

8. ABUTILON Americanum, folio hastato, flore amplo purpureo-caeruleo, longo petiolo insidente. Houst. American Abutilon, with a spear-shaped Leaf, and a large blue Flower, with a long Foot-stalk.

9. ABUTILON Americanum, flore albido, fructu & capsulis vesicariis planis conflato, pediculo geniculato. Martyn. American Abutilon, with a white Flower, and a plain bladder Fruit, with a jointed Foot-stalk.

10. ABUTILON Americanum, ridetis foliis, flore carneo, fructu pentagono aspero. Houst. American Abutilon, with Currant Leaves, a flesh-coloured Flower, and a rough five cornered Fruit.

11. ABUTILON Americanum frutescens, folio amplo cordato subtus lanuginosus, floribus amplis luteis. Houst. Shrubby American Abutilon, with a large heart-shaped woolly Leaf, and large yellow Flowers.

12. ABUTILON fruticosum aquaticum, folio cordato scabro, flore pallide luteo. Shrubby Aquatic Abutilon, with a rough heart-shaped Leaf, and a pale yellow Flower.

13. ABUTILON Americanum fruticosum, foliis cordatis, floribus parvis purpurascens. Houst. Shrubby American Abutilon, with heart-shaped Leaves, and small purple Flowers.

14. ABUTILON lavatera flore, fructu cristato. H. E. Abutilon, with a Flower like Lavatera, and a crested Fruit.

15. ABUTILON arboreum, folio albica, fructu villosa, flore maximo ex rubro flavescente. Houst. Tree Abutilon, with a Marsh-mallow Leaf, a hairy Fruit, and a very large yellowish red Flower.

16. ABUTILON frutescens lanuginosum, foliis subrotundis, flore amplo luteo patulo. Houst. MSS. Shrubby woolly Abutilon, with roundish Leaves, and a large yellow spreading Flower.

The first Sort here mentioned is an annual Plant, which is hardy enough to come up in the common Ground, and will perfect its Seeds without any Trouble; but will not bear transplanting, unless when the Plants are very young; so that the Seeds should be sown where the Plants are designed to remain; and if the Seeds are permitted to fall, they will come up the following Spring without any Care. This is very common in Virginia, and most of the other Parts of America; where it is called by some of the Inhabitants Marsh-mallow, because the Leaves are soft and woolly, and is used by them instead of Marsh-mallow, which is not a Native of those Countries. There is no great Beauty in this Sort.

The 3d Sort grows naturally in Carolina, from whence the Seeds were brought by Mr. Catesby. This is a trailing Plant, whose Branches lie on the Ground, and put out Roots at every Joint; the Flowers come out from the Wings of the Leaves, which are of a red Copper Colour, and small, so make no great Figure. These

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These appear in *July* and *August*, and the Seeds ripen in a Month or five Weeks after. If the Seeds be permitted to scatter, the Plants will come up the following Spring, and require no other Care but to thin them to a proper Distance, and keep them clear from Weeds. The Seeds may also be sown in the Spring, on a Border of light Earth where they are to remain. This is an annual Plant, which perishes in Autumn.

The 2d, 5th, 7th, 8th, 9th, 10th, and 14th Sorts, are all of them annual Plants, which require to be sown on a moderate hot Bed; and when they have obtained Strength, may be transplanted out into the common Ground, where they will perfect their Seeds in Autumn. But as they are Plants of little Beauty, they are seldom cultivated in Gardens.

The 4th, 11th, 12th, and 13th Sorts, are shrubby Plants, which are propagated by Seeds. These must be sown upon a moderate hot Bed; and the Plants must be potted, and preserved in a moderate Stove, otherwise they will not endure the Cold of the Winter in *England*.

The 4th Sort will live two Years, and grow to the Height of nine or ten Feet. The Leaves are large and woolly, as are the Stalks, but the Flowers have little Beauty, being small, and of a yellow Colour, so that the greatest Beauty of it consists in the Size of the Leaves, which are much larger than those of any other Species of this Genus; I have measured some of them which were more than ten Inches long, and eight broad in their widest Part.

The 11th, 12th, and 13th Sorts, are Shrubs growing to the same Height as the former. The 11th has pretty large yellow Flowers, which make a tolerable good Appearance when open, but each Flower is of short Duration. There is, however, a Succession of them for more than two Months; this Plant may better deserve a place in Gardens, than most of the other Species.

The 12th and 13th Sorts are Plants of little Beauty, their Flowers being small; and there is nothing remarkable in their Leaves to recommend them, so that they are only preserved in the *European* Gardens for the sake of Variety. The usual Time of their flowering is in *July*, *August*, and *September*, but they will seldom flower in the open Air in *England*; therefore they should be continually kept in the Stove, to have them in any Degree of Perfection, and with proper Care they will ripen their Seeds in Autumn.

These Sorts grow naturally in *Jamaica*, at *La Vera Cruz*, and the *Havannah*, from whence their Seeds have been brought to *Europe*.

The 6th Sort grows to be a Shrub of eight or nine Feet high, and may be preserved through the Winter in a Green-house, and exposed in Summer to the open Air, where it will flower, and produce ripe Seeds in Plenty.

The 15th Sort is a Native of the *West-Indies*, the Seeds of which were sent from the north Side of *Jamaica*. This grows to the Height of ten or twelve Feet, and makes a handsome Plant. The Flowers are very large, and, at first Appearance, of a pale red Colour; but, as they expand, change to a yellow. They are of short Duration; but there is a Succession of them upon the Plants, for two Months, when properly treated.

It is propagated by Seeds, which are to be sown upon a hot Bed in the Spring, and afterwards managed as hath been directed for the other tender Sorts before-

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mentioned; and must be preserved in a warm Stove, otherwise it will not live through the Winter in *England*. In Summer it ought to have a large Share of free Air in warm Weather, and be frequently watered. It flowers in *July* and *August*, and with Care will ripen Seeds in *England*.

The 16th Sort was discovered by the late Dr. *Houssoun*, at *La Vera Cruz*, in *America*, from whence he sent the Seeds to *Europe*, which flourished in several Gardens. This is the most beautiful Species of this Genus yet known. It grows to the Height of six or seven Feet, having a smooth woody Stem, which puts out many lateral Branches toward the Top. They are garnished with smooth heart-shaped Leaves. The Flowers come out at the Wings of the Leaves, standing upon long Foot Stalks singly. They are composed of five large yellow Petals, which open like those of the common Mallow, having in the Center a Column, composed of the Style and Stamina, coalescing, as in all the Plants of the same Class. After the Flower is past, the Germen becomes a five cornered Seed Vessel, having five Cells, which contain smooth oblong Seeds.

The Plants of this Sort will continue three or four Years, and produce good Seeds, but they require a warm Stove to preserve them through the Winter in *England*. This must be treated in the same Manner as the tender Sorts before-mentioned. This Species is represented in the first Number of my Figures of Plants.

ACACIA, *Egyptian* Thorn, or Binding Bean-Tree.

The Characters of this Genus are,

The Flower is tubulous, and consists of one Leaf, divided slightly at the Top into five Parts; in the Center is fixed the oblong Germen, supporting a slender Style, which is attended by many fine hairy Stamina, which are longer than the Style, and have each an incumbent Summit. The Flowers are collected, many of them, into one Head, which is either spherical or oblong. After the Flowers are past, the Germen turns to a Pod, which is long, and divided into several Cells by transverse Diaphragms, each having one oblong compressed Seed.

The Species are,

1. ACACIA vera. J. B. The true *Egyptian* Acacia. Dr. *Linnaeus* titles this *Mimosa spinis geminis approximatissimis bipinnatis partialibus bijugatis*. Hort. Cliff. 208.
2. ACACIA Indica, foliis scorpioidis leguminosae, siliquis fuscis teretibus resinosis. H. L. The Indian Acacia, with taper resinous Pods. This is titled by Dr. *Linnaeus*, *Mimosa spinis geminis distinctis foliis bipinnatis partialibus octojugatis*.
3. ACACIA similis Mexiocana, spinis cornu similibus. Brcyn. The great horned Acacia. Vulg. This is titled by Dr. *Linnaeus*, *Mimosa spinis axillaribus geminis connatis foliis bipinnatis*. Hort. Cliff. 208.
4. ACACIA quodammodo accedens, fructu Ceratiae & Acacia media Jamaicensis spinosa, bigeminatis foliis, flosculis flamineis, atronitente fructu, siliquis intortis. Pluk. Phyt. Acacia with branching Leaves, and twisted Pods.
5. ACACIA arborea major spinosa, pinnis quatuor majoribus s. brotundis, siliquis varie intortis. Sloan. Cat. Plant. Jam. Large four leaved Acacia, with twisted Pods.
6. ACACIA Americana frutescens non aculeata, flore purpurascens. Plum. Cat. Shrubby American Acacia without Thorns, and a purplish Flower.

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7. *ACACIA non spinosa, flore albo, staminibus longis; foliorum pinnis latiusculis, glabris & auritis. Houst.* *Acacia* without Thorns, having white Flowers with long Filaments and broad smooth leaves.

8. *ACACIA bumilis, non spinosa, foliis subtus incanis florum-staminibus longis rubentibus. Houst.* Dwarf *Acacia* without Thorns, having red Flowers with long Filaments.

9. *ACACIA Americana, non spinosa, flore purpureo, staminibus longissimis, siliquis planis villosis, pinnis foliorum tenuissimis. Houst.* American *Acacia* without Thorns, having purple Flowers, with very long Filaments, flat hairy Pods, and very narrow Leaves.

10. *ACACIA spinosa, foliorum pinnis tenuissimis glabris, floribus globosis luteis, spinis longissimis. Houst.* Prickly *Acacia*, with very narrow smooth Leaves, round yellow Flowers, and very long Thorns.

11. *ACACIA non spinosa, flore albo, foliorum pinnis latiusculis glabris, siliquis longis planis. Houst.* White flowering *Acacia* without Thorns, having broad smooth Leaves, and long flat Pods.

12. *ACACIA non spinosa, tenuifolia, villosa, floribus globosis albis, siliquis brevibus birsutis. Houst.* Narrow leaved hairy *Acacia* without Thorns, having round white Flowers, and short hairy Pods.

13. *ACACIA non spinosa, latiore folio villoso floribus globosis albis, siliquis brevibus birsutis. Houst.* Broad leaved hairy *Acacia*, having round white Flowers and short hairy Pods.

14. *ACACIA non spinosa, floribus globosis albis foliorum pinnis tenuissimis glabris; siliquis ad singula grana tumidis. Houst.* *Acacia* without Thorns, having round white Flowers, with very narrow smooth Leaves, and jointed Pods.

15. *ACACIA spinosa tenuifolia, spinis singulis cornu bovinum per longitudinem fissum referentibus. Houst. Cat.* *Acacia* with single Thorns shaped like those of an Ox's Horn, and seem as if split through their Length.

16. *ACACIA spinosa tenuifolia, siliquis latis, spinis minimis recurvis solitariis. Houst. Cat.* Prickly narrow leaved *Acacia*, with broad Pods, and small recurved Spines, which come out single.

17. *ACACIA spinosa tenuifolia, floribus spicatis luteis, siliquis longissimis compressis flavis. Houst. Cat.* Prickly narrow leaved *Acacia*, with yellow spiked Flowers, and broad compressed Pods which are yellow.

This Dr. Linneus has titled *Mimosa aculeata foliis bipinnatis numerosissimis lineari acerosis panicula aculeata capitulis globosis. Flor. Zeyl. 216.*

18. *ACACIA Americana cornigera, spinis crassioribus & nigricantibus.* Horned American *Acacia*, with very thick black Spines.

19. *ACACIA non spinosa tenuifolia villosa, siliquis latis intortis.* Smooth narrow leaved hoary *Acacia*, with broad twisted Pods.

20. *ACACIA Americana tetraphylla & spinosa, floribus globosis, staminibus florum longis rubentibus.* Prickly four leaved *Acacia*, with globous Flowers, having long red Stamina.

21. *ACACIA Americana, faginis foliis, tetraphylla, flosculis staminosis in spicam depositis. Pluk. Amalth. 4.* Four leaved American *Acacia*, with staminous Flowers disposed in Spikes.

22. *ACACIA Buxifoliis rotundioribus floribus albis siliqua lata compressa. Catesb. Carol. i. e. Acacia* with round Box Leaves, white Flowers, and broad flat Pods.

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The 1st Sort is the Tree from whence the true *Succus Acaciae* is taken, and the Gum *Arabic* exudes from the Branches of the same; which, though mentioned as a Native of *Egypt*, yet is found in divers Parts of *America*, from whence the Seeds of this Tree have been sent into *England*, and raised in several Gardens near *London*.

This Tree arrives to a large Size in the Countries where it grows, but in *England* it is rarely seen more than eight or ten Feet high. It frequently flowers in Autumn, but never produces any Seeds.

The 2d Sort is the most common Kind in *Jamaica* and *Barbadoes*, and the other warm Parts of *America*; and, for the Sweetness of its Flowers, has been dispersed through most Parts of *Europe*; and though a Native of the warmer Parts of the *Indies*, it hath been made familiar to the *Italian* Gardens, and is cultivated likewise in great Plenty in *Portugal* and *Spain*.

The *Italian* Gardeners, who bring over Orange Trees, &c. every Year, generally bring also many young Plants of this Sort to *England*, under the Title of *Gazia*; but as they are too tender to live in a common Greenhouse in *England*, so few of those which are purchased of them succeed.

I have had some Plants of this Sort upwards of sixteen Feet high, which have produced great Numbers of Flowers in *July* and *August*, but these were kept in a Stove under Glasses, for they will not flower in the open Air in this Country. The Flowers are of a bright yellow Colour, and smell sweet; in the *West-Indies* it is called *Sponge Tree*.

The 3d Sort is at present very rare in *England*, and only to be found in some curious Gardens. This Tree produces its Spines by Pairs, which are extreme large and crooked, and of a whitish Colour; but I do not remember ever to have seen this Flower.

In *England*, from the dried Samples, however, which I have received from *Campeachy*, with many Flowers upon them; there appears but little Beauty in them, nor do the Trees in their native Soil make a better Appearance, their Branches always growing deformed, and being but thinly garnished with Leaves, when in their greatest Vigour. For several Months, too, they are destitute of Leaves, so that the only Thing remarkable in this Tree is, the uncommon wreathed Spines with which the Trunk and Branches are fully beset. These have the Resemblance of Animal Horns, and are variously twisted and contorted.

The 18th Sort is of this Kind, but differs from it in having short thick black Spines, which seldom exceed an Inch in Length; whereas the Thorns of the other Sort are often four or five, being variously twisted, and very white. There are two Sorts of this, one with round, and the other with long Flowers, which also differ in their Leaves. The Pods of these Sorts abound with a sweet Pulp, which draws the Insects to feed upon it, whereby the Seeds are generally destroyed; so that it is very rare to find any entire Pods upon the Trees in the native Places of their Growth.

The 4th Sort was brought from the *Bahama Islands* by Mr. *Catesby*, Anno 1726. The Seeds of this Plant (which are flat, and one Half of a beautiful red Colour, the other Half a deep black) grow in long twisted Pods, opening when the Seeds are ripe, on one Side,

Side, and letting them out; which hanging by a small Thread for some Time out of the Pods, make a very agreeable Appearance. The Leaves of this Tree branch out and divide into many Ramifications: The Lobes are roundish, and placed in a very regular Order. The Flowers have not as yet appeared in *England*, but from a Painting done from the Plant in the Country, they seem to be very beautiful.

The 5th Sort was brought from *Jamaica*, and is growing in the *Physic Garden* at *Chelsea*; this hath four large Lobes to each Leaf; the Spines are short, stiff, and crooked, and the Seeds grow in twisted Pods like the former. This Plant is well described in Sir *Hans Sloane's Natural History of Jamaica*. By the Inhabitants of *America* it is called *Doctor Long*, under which Name the Seeds are frequently brought to *England*.

The 16 Sorts next mentioned, were collected by the late ingenious Dr. *William Houstoun*, in *Jamaica*, at *Vera Cruz* and *Campeachy*, who sent the Seeds of most of them into *Europe*, many of which are now growing in the *Physic Garden* at *Chelsea*, where some of them have produced Flowers, and the 13th Sort has produced Plenty of Seeds.

These being all tender, are to be placed in Stoves in the Winter, and in Summer must be but a short Time exposed to the open Air, and have a warm Situation.

The Trees are propagated by sowing their Seeds on a hot Bed in the Spring of the Year, which will in a short time appear above Ground, and in about five or six Weeks after, be fit to transplant, when a fresh hot Bed is to be prepared for them, and should be pretty warm; the next Thing to be provided is a Quantity of small Halfpenny Pots, which are to be filled with fresh light sandy Earth; these should be plunged into the hot Bed, but not into Dung: for if these Beds are made with warm Horse Dung, they ought to be covered with Earth as deep as the Pots, whose Bottoms should rest upon the Dung; for otherwise the Roots of the Plants may suffer by too much Heat; but Beds of Tanner's Bark seldom heat so violently. As soon as the Earth in the Pots is warm, which will be in two or three Days, you should carefully take up the young Plants out of the first hot Bed, planting 4 or 5 Plants into each of these Pots, giving them a gentle Watering to settle the Earth to their Roots, and screening them with Mats over the Glasses from the Heat of the Sun, until they have taken Root; after which you must give them Air, by raising the Glasses, in Proportion to the Heat of the Weather, or Constitution of the Plants.

The 2d, 3d, and 6th Sorts are tender, and should be kept in the hot Beds till *July*, when they may be exposed to the Air by Degrees, though the Glasses should not be quite removed from them the first Year, but only drawn off in the Day, in good Weather, and covered every Night. These must be set in a Stove the first and second Winters, while young, as being then pretty tender; but when they are grown woody, will live in a good Green-house very well, and may be exposed in Summer time, with Oranges, Myrtles, &c. If kept in a Green-house, they require but little Water in Winter, especially such as shed their Leaves, being at that Season incapable of discharging a Redundancy of Moisture; their Leaves, which were the

greatest Instruments in throwing off the superfluous Humour by Perspiration, being gone, and the whole Tree seeming to remain for a certain Time in a State of Rest.

The 1st, 4th, and 5th Sorts are very tender (especially while young) and therefore should have a hot Bed of Tanners Bark; and as they increase in Bulk, should be shifted into bigger Pots. The Earth for these should be a little lighter, and more inclined to a Sand, than for the other Sorts; but never allow them Pots that are too large, which is full as bad to these as to Orange Trees; neither give them too much Water, especially in Winter. The 1st Sort, being the hardiest of the three, will, when grown to be woody, stand in a common Stove amongst *Guavas*, *Viburnums*, &c. which should be kept to the Point of temperate Heat in Winter; and in the Summer time, in warm Weather, may enjoy the open free Air: But the 4th and 5th Sorts must have a Bark Stove in Winter, nor should they be exposed to the open Air in Summer, at least for four or five Years, until they are grown very woody; for they are very tender, and with great Difficulty preserved in this Climate. The Stove in which these should be placed in Winter, must be kept to about the temperate Point, as marked on the Botanical Thermometers. These should have very little Water in Winter, but in Summer Time will require frequent Refreshings; though at that Season it should not be given them in great Quantities at one Time. The 4th Sort is a very beautiful Tree. The 5th sheds its Leaves just before the new ones come on, so that it is naked of Leaves about a Month or six Weeks in the Spring of the Year, which has occasioned some People to throw them away as dead, when, if they had let them remain, they would have come out fresh again. This I thought proper to mention, in order to caution People not to be too hasty in throwing out Trees for dead, but preserve them through the succeeding Summer, to see if they will shoot again; for I have known several Plants, which, after having been given over by unskilful Persons for dead, have the *July* following shot out vigorously again; and others, which have died to the surface of the Earth, have risen again from the Root.

The 3 Sorts of horned *Acacias* are very often destitute of Leaves for two or three Months, appearing to have no Life; but they will put out fresh Leaves towards Autumn, which is commonly the Season when they are most vigorous. These should be exposed in the Summer Season for about two Months, to clear them from Insects, which greatly infest them, in a Place defended from strong Winds; and in Winter they require a moderate Degree of Warmth.

All the other Sorts here mentioned are propagated by Seeds, which, seldom ripening in this Country, must be procured from *America*, particularly at *Campeachy*, where there is great Variety of this Tree, many Sorts of which have been hitherto unknown to Botanical Writers. In bringing over the Seeds of these Trees, they should be taken out of the Pods when gathered, and put up in Papers, and ought to have Tobacco, or some other Herb noxious to Insects, put between the Papers, otherwise the Seeds will be eaten and destroyed before they arrive in *England*. For the Insects deposit their

Eggs in small Punctures which they make in the Pods ; and as these are soon hatched, they immediately attack the Seeds for Food, and eat Holes through them, by which they are spoiled, this has often happened to Seeds which have been sent me from *America*.

The 22d Sort is a Native of the *Babama Islands*, it is figured by Mr. *Catesby*, in his *Natural History*, but the Leaves of the Plants are not well expressed. It grows to be a large Timber Tree in its native Country, where it is commonly called *Mabogony*. The Trunks of these Trees are very strait, and frequently more than three Feet Diameter.

There are many Plants of this Sort now in the Gardens, which have been raised from the Seeds, and were lately sent from the *Babama Islands* ; these grow very strait, and are well garnished with Leaves, which are of the winged Kind, but very ramose, so make a handsome Appearance in the Stove ; they are tender while young, and therefore to be treated in the same Way, as directed for the other tender Sorts before mentioned.

There are several of these *Acacias*, which are very tender while they are young ; but, after two or three Years Growth, become hardy enough to bear the open Air in Summer ; though scarce any of them will live through the Winter, in a Green-house, unless they have some Warmth in very cold Weather, the first Sort I have kept for some moderate Winters in a Green-house, but those Plants were become strong and woody ; and in a Winter, which proved more severe, were all destroyed : So that they should be placed in a moderate Stove in Winter, with some of the less tender Exotics, where they will thrive better than in a greater Degree of Heat.

ACACIA Germanorum. See *Prunus Sylvestris*.

ACACIA Virginiana. See *Robinia*.

ACACIA, the Three Thorned. See *Gleditsia*.

ACALYPHA, three seeded Mercury.

The Characters are,

It hath male and female Flowers in the same Plant, the male Flowers grow in Clusters above the female, and neither of them have any Petals ; the male Flowers have an Empalement, composed of three roundish concave Leaves, in which are situated eight or ten Stamina joined together at their Base ; these are short, and crowned with roundish Summits. The female Flowers have a three leaved Empalement, in the Center of which is situated a round Germen, supporting three branching Styles. When the Flowers decay, the Germen turns to a roundish Vessel divided into three Cells by deep Furrows, in each of the Cells is contained one large round Seed.

The Species are,

1. ACALYPHA involucris femineis cordatis incis, foliis ovato-lanceolatis petiolo longioribus. Hort. Upsal. 290. i. e. Three seeded Mercury, whose female Flowers have a cut heart shaped Empalement, and oval spear shaped Leaves, with long Foot Stalks. *Mercurialis tricoccus*, &c.

2. ACALYPHA involucris femineis cordatis suberenatis, foliis ovatis petiolo brevioribus. Flor. Zeyl. 341. i. e. Three seeded Mercury, whose female Flowers have an indented heart shaped Empalement and oval Leaves, with a short Foot Stalk. *Urtica tricoccus*, &c.

3. ACALYPHA involucris femineis integerrimis foliis lanceolatis obtusis. Lin. Sp. Plant. 1004. i. e. Three seeded

Mercury, whose female Flowers have whole Empalements, and blunt spear shaped Leaves.

The 1st Sort grows naturally in *Virginia*, and several other Parts of *North America*, from whence I have received the Seeds. This is an annual Plant, which seldom grows more than a Foot high, sending out several side Shoots towards the Bottom. The Leaves are very like those of the broad leaved *Pellitory* of the Wall, and are placed alternately, having long Foot Stalks, from the Aæ, or Wing of the Leaf ; the Flowers are produced in small Clusters, the Male always being above the Female. These make but a poor Appearance, and resemble those of the *Pellitory* so much, that at a small Distance, any Person might suppose them to be the same, till convinced by a nearer Inspection.

If the Seeds of this Sort are permitted to scatter, the Plants will come up in the Spring, better than if sown by Hand ; for if they are not put in the Ground in Autumn, the Seeds rarely grow the first Year. All the Culture this Plant requires, is to keep it clear from Weeds, and let it remain where it was sown, for it doth not bear removing well. It flowers in *August*, and the Seeds ripen in *October*.

The 2d Sort is a Native of the warmest Countries. I received the Seeds of this from *Jamaica*, where it grows in great Plenty. This is also an annual Plant, which in *England* seldom exceeds the former Sort in its Stature. The Leaves of this Sort greatly resemble those of the annual *Nettle*, and sting full as much when touched. This is too tender to thrive in the open Air in *England* ; therefore the Seeds should be sown in Pots, which are to be plunged into a hot Bed, and if the Plants do not come up the first Year (which often happens) the Pots should be put in shelter in Winter, and the following Spring plunged again into a hot Bed, which will bring up the Plants ; these must be transplanted into Pots, and brought forward in hot Beds, otherwise they will not produce Seeds in *England*.

The 3d Sort was found in great Plenty by Dr. *William Houstoun*, at *La Vera Cruz*, in *America*. This is an Inhabitant of low marshy Places, and grows about three Feet high, with an herbaceous Stalk ; the Leaves are placed alternately on the Stalks, these differ so much in their Figure, as to deceive the most skilful Botanist, for some Plants will have very narrow long Leaves, others as broad as those of the *Chestnut Tree*, and deeply veined, which Varieties will arise from the Seeds of the same Plant, as I have frequently observed.

This is an annual Plant, and must be raised in a hot Bed ; when the Plants are fit to remove, they should be transplanted each into a small Pot, and plunged into a fresh hot Bed to bring them forward ; they afterwards must be removed into a Stove, where they will flower and perfect their Seeds in *September*, and the Plants will decay soon after.

These Plants have no Beauty to recommend them, but as they are preserved in several Gardens, for the sake of Variety, so I thought it necessary to insert them here.

ACANTHUS, *Branca Ursina*, or Bear's-breech.

The Characters of this Plant are,

The Flower hath a double Empalement, the outer one is composed of three Leaves, the under being broad, concave, and deeply sawed on the Edge ; the two lateral are spear shaped

shaped, and very slightly sawed towards the Top. The inner Empalement consists of two Leaves, the upper one being concave, and bent over like an Arch, this is sawed at the Top; the under is reflexed downward, so is convex on the upper Surface. The Flower is of one Leaf, unequal, the Beard, or lower Lip, being large, plain, and erect, this is slightly indented at the Extremity; the Stamina and Style occupy the Place of the upper Lip. These are stretched out beyond the Empalement, and are also arched. There are two long, and two shorter Stamina, which closely coalesce to the Style; this is situated upon a roundish Germen, which afterwards becomes an oval Capsule, having two Cells, each containing one fleshy smooth oblong Seed.

The Species are,

1. *ACANTHUS foliis sinuatis inermibus subtus villosis*; the common, or smooth Garden Bears'-breech.
2. *ACANTHUS foliis sinuatis inermibus glabris lucide virens*; Portugal Bear's-breech, with smooth sinuated Leaves of a shining green Colour.
3. *ACANTHUS foliis laciniatis pinnatifidis spinis mollioribus*; middle Bear's-breech, with deep lacinated Leaves, having soft Spines.
4. *ACANTHUS, foliis pinnatifidis spinosis*. H. C. prickly Bear's-breech. *Acanthus Aculeatus*.
5. *ACANTHUS foliis pinnatifidis rigidis spinosissimis*; eastern Bear's-breech, with stiff pinnated Leaves, strongly armed with Spines. *Acanthus Orientalis*.
6. *ACANTHUS caule fruticoso aculeato*. Lin. Sp. Plant. prickly Bear's-breech, with a shrubby Stalk. This is the *Acanthus Malabaricus Agrifolii folio*. Pet. Hort. Sicc. 10.

The 1st Sort is what is used in Medicine, and is supposed to be the *Mollis Acanthus* of Virgil. The Leaves of this Plant are cut upon the Capitals of Corinthian Pillars.

The 2d Sort was discovered in Portugal, by Dr. Bernard de Jussieu, Demonstrator of Plants in the Royal Garden at Paris, from whom I received the Seeds in 1725, which succeeded in the Chelsea Garden, and frequently perfects Seeds there; which being sown, constantly produce the same Plants as the Parent, and therefore must be a distinct Species.

The 3d Sort hath been long an Inhabitant in the Garden at Chelsea, where it constantly flowers, and produces good Seeds, and these being sown, do not produce any Variety; the Plants being always the same, the Leaves of this Sort are deeply lacinated, each Segment ending in a soft Spine.

The Leaves of the 4th Sort are also deeply jagged, in very regular Order, and each Segment it terminated with a sharp Spine, as are also the Foot Stalks of the Leaves, and the Empalement of the Flower, which renders it troublesome to handle either of them. I have frequently raised Plants of this Sort from Seeds, which have never varied from the Parent Plant.

The 5th Sort of Bears'-breech was discovered by Dr. Tournefort in the Levant, who sent the Seeds of it to the Royal Garden at Paris.

The Leaves of this Sort always grow near the Ground, and are much shorter and stiffer than those of any of the other Sorts, having whitish Veins, a little resembling the Ladies Thistle. They are also much neater lacinated, but are armed with stronger Spines, which are whiter than those of the other Species; this and the

4th Sort sends up much taller flower Stems than either of the other. I have frequently had them upwards of four Feet high, and garnished with Flowers above three Feet; but the Flowers open successively, beginning towards the Bottom, so that there are not many of them open at the same Time on the Stalks.

The 6th Sort grows naturally in India, I have also received it from the Spanish West-Indies. This is a Shrub, which rising about four Feet high, is divided into many Branches, which are garnished with Leaves, very like those of the common, both in Size and Shape, and are armed with Spines in the same Manner towards the Extremity of the Branches; the Flowers come out singly, which are of a white colour, and shaped like those of the common *Acanthus*, but smaller. After the Flower is past, the Germen becomes an oval bicapular Vessel, having one oblong Seed in each Cell. This Shrub is ever-green, but is too tender to thrive out of a Stove in England, and can only be propagated by Seeds, which do not ripen in Europe.

The other five Sorts are lasting Plants, which may be propagated either by Seeds, or parting their Roots; if, by the former method, the Seeds should be sown in a light dry Soil, towards the End of March; if the Season proves favourable, the Plants will appear in May, and all the Culture they require, is to keep them clean from Weeds, and where the Plants are too close, to thin them, so as to leave them about six Inches asunder, which will be room enough for them to grow till Michaelmas, when they should be transplanted where they are designed to remain. The 1st and 2d Sorts, being tenderer than the others, ought to be planted in a warm Border near a Wall; and as these do not multiply so fast by their Roots, so they do not require more room than three Feet; but the other Sorts spread their Roots to a great Distance, and therefore must have more than twice that Room. These being hardy may be planted between Shrubs, to fill up vacant Spaces, where they will thrive fast enough, provided the Ground be light, and not over wet, and when they are in Flower, will make an agreeable Variety. When these latter Sorts are propagated by their Roots, it may be performed either in Spring, or Autumn; but the two first must only be removed in the Spring, for if they are transplanted in the Autumn, and the following Winter prove cold, they will be in Danger of being destroyed.

These Plants take Root very deep in the Ground, so that when they are planted in wet Ground, their Roots will rot in Winter: I have frequently traced them more than four Feet, therefore they should not be removed after they have been growing long in a Place, but the side Shoots may be annually taken off, especially from the three creeping Kinds, otherwise they will spread so far, as to overbear any of their neighbouring Plants or Shrubs. When the Sorts, with creeping Roots, are once established in a Garden, they are with Difficulty eradicated, for every Root which may happen to be left, will shoot again, so as to become troublesome.

The 1st, 3d, and 4th Sorts grow naturally in the Woods about Naples and in Sicily, as also in several Islands in the Archipelago, the 2d in Portugal and Spain, and the 5th in the Levant. They all flower in July and August, and their Seeds ripen in October.

A C E

ACARNA. See Cnicus.

ACER. The Maple Tree.

The Characters of this Tree are,

It hath male and hermaphrodite Flowers, growing in the same Bunch, the Empalement of the Flower is of one Leaf, which is cut into five acute Segments almost to the Bottom; the Flowers have five Leaves, which are oval, and spread open over the Empalement. In the Center are placed eight short Stamina, which are crowned with Summits placed cross Ways. The hermaphrodite Flowers have a compressed Germen, situated at the bottom of the Empalement, and a double Stigma, which afterwards become two winged Seed-vessels joined at their Base, each inclosing one round Seed.

The Species are,

1. ACER foliis quinquelobis inæqualiter serratis floribus racemosis. Lin. Sp. P. The greater Maple, falsely called Platanus. The Sycamore Tree, vulgò.

2. ACER foliis lobatis obtusis emarginatis. Lin. Sp. Plant. 1055. The small or common Maple. By the French, Petit erables des bois.

3. ACER foliis compositis floribus racemosis. Hort. 144. The Virginia ash-leaved Maple. This is the Acer maximum foliis trifidis vel quinquifidis Virginianum. Pluk. Phyt.

4. ACER foliis quinquelobis acuminatis acutè dentatis glabris floribus corymbosis. Lin. Flor. Succ. 303. The Norway Maple with plane-tree Leaves.

5. ACER foliis quinquelobis subdentatis subtus glaucis pedunculis simplicissimis aggregatis. Lin. Sp. Plant. 1055. The Scarlet flowering Maple of Virginia.

6. ACER foliis quinquepartito-palmatis acuminato dentatis. Lin. Sp. Plant. 1055. The American Sugar Maple.

7. ACER foliis trilobis acuminatis serrulatis floribus racemosis. L. S. P. Mountain Maple of America.

8. ACER foliis lobatis, minimè incisis fructu racemoso. The Italian Maple, commonly called Opalus.

9. ACER foliis trilobis integerrimis. Prod. Leyd. 459. The Montpellier Maple.

10. ACER foliis trilobis integerrimis subvillosis. The Eastern Maple with Ivy Leaves.

11. ACER foliis ovatis integerrimis sempervirentibus. Eastern Maple with oval entire ever-green Leaves.

12. ACER foliis cordatis indivisis serratis lobis obsoleteis floribus racemosis. Lin. Spec. Plant. 1054. Tartarian Maple with heart-shaped sawed Leaves, and Flowers growing in long Bunches.

Most of these Trees are easily propagated by sowing their Seeds, soon after they are ripe, in an open Bed of common Earth, covering them about half an Inch thick with light Earth. The Spring following they will appear above Ground, and, if kept clear from Weeds, will grow above a Foot high in the first Summer. The Michaelmas following (if they are thick in the Seed Bed) you may take out a part of them, and transplant them into a Nursery, in Rows, at three Feet Distance, and two Feet asunder in the Rows; in which Place they may remain three or four Years; when they will be large enough to plant out for good.

If the Seeds of any of the Sorts of Maple are kept out of the Ground till Spring, they rarely come up the same Year, and many times do not grow; so that the surest Method of raising them is, to sow the Seeds as soon as possible when they are ripe; and, if the Seeds are to be transported to any Distance, it will be proper

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to put them up in Sand, whereby their growing Quality will be preserved.

The 1st Sort is very proper to make Plantations near the Sea; or to shelter such Plantations of Trees as are too nearly situated thereto. This Tree thrives, and resists the Spray, which is usually blown from the Sea, better than most other Trees do. The variegated Sort is also raised from Seeds of the same Kind; and most of the Plants so raised, will be as finely striped as the old Plant from whence the Seeds were taken, which is not common to many other variegated Plants.

The common Maple is too well known to need any particular Account, it growing, very frequently, in Hedge-rows in most parts of England. It is raised in the same Manner with the former.

The Virginian flowering Maple was raised from Seeds which were brought from Virginia many Years since by Mr. John Tradescant, in his Garden at South Lambeth, near Vauxhall, and since, in the Gardens of the Bishop of London, at Fulham, where it has flowered for several Years, and produces ripe Seeds, from whence several Trees have been raised. It may be also propagated by laying down the young Branches early in the Spring, giving them a little Slit at a Joint, by which Means they will have taken sufficient Root by that time twelve Months to be transplanted elsewhere. They require a Situation a little defended from the North-east Winds, especially while young; and delight in a moist light Soil, in which they thrive much better than in a dry Ground, and will produce more Flowers, and better Seeds. This Tree commonly flowers in the beginning of April, and the Seeds are ripe in five or six Weeks after; at which Time they should be sowed; for they are very apt to perish, if kept long out of the Ground.

There is another Variety of the flowering Maple, which was sent from America to Sir Charles Wager, and flourished several Years in his curious Garden at Parsons-green, near Fulham. This is by the Gardeners titled Sir Charles Wager's flowering Maple. The Flowers of this Kind come out in very large Clusters, and surround the younger Branches, so as to appear at a small Distance covered with them. This Tree is now become common in the curious Nurseries near London, so that the former Sort is not so much esteemed, being less beautiful; but it is doubtful if they are distinct Species.

The Ash-leaved Maple is a very strong shooting Tree, and is in Virginia, one of the largest Trees of this Kind. It must be planted in Places not too much exposed to violent Winds, being subject to split thereby. This Tree ripens Seeds very well in England, by which means it is easily propagated, or by laying down the Branches, also by Cuttings planted in Autumn.

The Norway Maple grows with us to a very large Size, equaling the other Maple for Bulk, and I believe will answer the same Purpose, for sheltering Plantations near the Sea; and is by far the handsomer Tree near a Habitation. For the greater Maple is very subject to exude a sweet clammy Juice from the Pores of their Leaves, which lodges upon their Surfaces, and thereby entices vast Quantities of Insects, which eat the Leaves full of Holes, and render them unsightly.

The Norway Maple has a milky sharp Juice, so that few Insects care to prey thereon: by which means the Leaves

Leaves are seldom eaten or defaced; and being smooth, and of a shining Green, they have a much better Appearance than those of the Sycamore; and in the Spring, when the Flowers are out, have great Beauty. This Tree is also raised by Seeds, of which it affords great Quantities, which rise and grow from the scattered Seeds as well as the common Sort.

It may also be propagated by Cuttings, which, if planted in Autumn, soon after the Leaves are fallen, will take Root as well as the common Willow; so that this being the most expeditious Method of propagating this Tree, it is chiefly practised by skilful Persons.

The variegated Kind is propagated by inoculating a Bud of the striped Kind into one of the plain Sort, though I am not sure whether it will take upon any other Sort of Maple, not having made the Experiment; but I believe it can scarce fail. Most, if not all the other Sorts of Maples, take very well upon each other.

The American Sugar Maple has some Resemblance to the Norway, when the Plants are young, but as they grow up the Leaves are more deeply divided, and their Surfaces less smooth, so that they are then easily distinguished. From this Tree the Inhabitants of North America make a very good Sort of Sugar and in large Quantities, by tapping the Trees early in the Spring, and boiling the Juice, which drawn out till the Fæces subside, is the Sugar; for I have found that the Ash-leaved Maple abounds with a saccharine Juice, in full as great Plenty as any other Sort. Mr. Ray and Dr. Lister, prepared a tolerable good Sort of Sugar from our greater Maple, by tapping some of the Trees in their bleeding Season; and I have observed, upon cutting off Branches from the scarlet Maple in February, a great Quantity of a very sweet Juice hath flowed out for several Days together.

The 8th Sort of Maple is very common in most Parts of Italy, but particularly about Rome, where it is one of the largest Trees of that Country, and is esteemed for the Size of the Leaves, which are large, affording a great Shade; so that these Trees are frequently planted by the Sides of Roads, and near Habitations. In England this Tree is very rarely to be met with, though it is hardy enough to bear the open Air; but as the Seeds have not been brought over to England till lately, there are no large Plants in the English Gardens at present.

The 9th Sort is common in the South of France and Italy, the Leaves of this resemble those of the common Maple, but are of a much thicker Substance, and not so large, and of a shining green Colour. They continue in Verdure very late in the Autumn, which renders them more valuable. At present this Sort is not common in England. I raised several Plants from Seeds a few Years past, some of which I communicated to curious Persons to propagate, that the Species might be more common. Those Plants which remain in the Chelsea Garden, grow full as well as the common Maple, and are equally hardy; for in ten Years, which they have been growing abroad, I have never observed that any Part of their Shoots have been injured by the Frost.

The 10th Sort hath some Resemblance to the 9th, which has led Dr. Linnaeus into a Mistake; for he supposes them to be the same Species, but if he had seen the Plants, he could not have doubted of their being different. The Leaves of this tenth Sort, being of a much thinner Texture, and both them and their Foot Stalks,

covered with a soft hairy Down, whereas those of the other, are quite smooth and stiff. This Sort grows naturally in the Levant.

The 11th Sort hath oval Leaves, which are placed opposite by Pairs, these are of the Colour and Consistence of those of the Box tree, and are always green. I was favoured with this Sort by Mons. Le Duc D'Ayen, who sent me the Plant from his curious Garden at St. Germain, the Seeds of which he received from the Levant. By the progress which this has made in England, it appears to be rather a Shrub than a Tree, but as it is an Ever-green, and will live in the open Air, so it is worthy of a Place in Gardens, where, in the Winter Season it will add to the Variety.

The 12th Sort is also scarce in England at present. This is a Native of Tartary, from whence the Seeds were sent to the Imperial Garden at Petersburg, and I was favoured with a few of them, by the Gentlemen of the Academy there. This Plant is very hardy in respect to Cold, but is very difficult to raise in England; for when the Plants are young, if they are exposed to the Sun but a few Hours, they will be destroyed. And though the Trees naturally grow on boggy Grounds, yet watering the young Plants much will kill them. The only Method to preserve them, is to cover the Surface of the Ground with Moss, which should be kept moist, and the Plants entirely shaded from the Sun the first Summer.

Most of the Sorts of Maple which come from America, are also very impatient of Heat while young; their Seeds therefore should be sown in a sheltered Situation, for if the Plants are exposed to the full Sun but one Day, when they first appear, few of them will survive it; but especially the Sugar Maple, of which Sort I constantly lost most of the Plants, till I had the Precaution to place the Pots, in which the Seeds were sown, entirely in the Shade; for no sooner are they exposed to the Sun, but they are immediately attacked by Insects, which in one Day will devour their Seed Leaves, after which the Plants suddenly drop to the Ground. This Precaution therefore is necessary to be observed, in raising most of the Sorts of Maple from Seeds.

The Timber of the common Maple is far superior to the Beech for all Uses of the Turner, particularly Dishes, Cups, Trenchers, and Bowls; and when it abounds with Knots (as it very often doth), it is highly esteemed by the Joiners for Inlayings, &c. and also for the Lightness of the Wood, is often employed by those that make Musical Instruments; and for its Whiteness, was formerly in great Request for Tables, &c.

ACETOSA, Sorrel.

The Characters are,

It is male and female in different Plants; the male Plants have a three leaved Empalement, in which are included six Stamina, crowned with flat oblong Summits, but have no Corolla or Petals: The female Flowers have also a three leaved Empalement, in the Center of which is situated a three cornered Germen, supporting a trifid Stylus. The Germen afterwards turns to a triangular Seed.

The Species are,

1. ACETOSA foliis sagittatis inferioribus pediculis caulinis sessilibus. Common or Meadow Sorrel. This is the *Acetosa pratensis*. C. B. P. 114.

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2. *ACETOSA foliis latissimis ad basin auriculatis*.
Greatest Mountain Sorrel.

3. *ACETOSA foliis lanceolato-bastatis radice repente*.
Common Sheep's Sorrel.

4. *ACETOSA foliis cordato bastatis radice repente*.
Round leaved or French Sorrel.

5. *ACETOSA humilis repens folio rotundo emarginato*.
Low creeping Sorrel with a round indented Leaf.

6. *ACETOSA foliis longissimis ad basin auriculatis
spicis florum longissimis*. Long leaved Mountain Sorrel.

7. *ACETOSA foliis oblongis pediculis brevissimis raro
florens*. Northern barren Sorrel.

The 1st of these Sorts, though but small in the Fields, yet, when sown in Gardens, will produce fair large Leaves, and is the same which is commonly cultivated in Gardens. It must be sown early in the Spring, in a shady moist Border; and if the Plants are afterward removed into another shady Border, at the Distance of four or six Inches square, they will produce larger Leaves, and continue longer. This is the common Sorrel used in Medicine; but the Northern barren Sorrel is preferred to it in the Kitchen Garden, because it rarely runs to Seed, but is increased by parting the Roots either in Spring or Autumn, and is fit for Use all the Year.

The round leaved (or French) Sorrel is the most grateful Acid, and is by many Persons preferred to the other two Sorts for Kitchen Use; it is also a medicinal Plant, and should not be wanting in any good Garden: It is a great Runner at the Root, by which Means it is easily propagated, and must be planted at a large Distance, two Feet square at least: It will agree better with an open Situation than the other two Sorts. And if the Flower Stems and rambling Branches are cut off in the Beginning of July, the Roots will soon put out new Leaves, which will be tender and much better for Kitchen Uses, than the older Leaves; so that by cutting down the Shoots of some Plants at different Times, there will always be a Supply of young Leaves, which is the only Part of the Plant used in the Kitchen. As this Sort is much preferable to the common Sorrel for Soups, so many Persons have of late Years cultivated it in their Gardens, since the Use of Sorrel has been greatly increased in England, by the Introduction of French Cookery, it being an Ingredient in many of their Sauces and Soups; inasmuch that about Paris, Sorrel is cultivated in great Quantity.

The Sheep's Sorrel is a common Weed in most Parts of England, growing upon dry Banks and in gravelly Soils in great plenty; for as it propagates very fast by its creeping Roots, so wherever it once gets Possession in the Ground, it soon multiplies. This is rarely admitted to have a Place in Gardens, but as it has long been continued in the Dispensatories as a medicinal Plant, it is here inserted.

The low creeping Northern Sorrel, is preserved in many Gardens for the Sake of Variety, but has not been used in the Kitchen. This Sort grows wild in most of the Northern Counties, as also in Wales. I have seen it growing in great Plenty in Yorkshire and Westmorland. The Leaves of this Sort have very short Foot Stalks, and are indented at both Ends. These grow near to the Ground, and the Flower Stems rarely rise above

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six inches high. The Roots creep in the Ground, whereby it multiplies exceedingly in a proper Situation. As this Sort grows naturally in shady moist Places, so whoever is desirous to have it thrive in a Garden, must plant it in a North Border and in a moist Soil, where it may be propagated in Plenty, and be used for the same Purposes as the others.

The two Sorts of Mountain Sorrel, are full as hardy as the common, and as their Leaves are much larger, so they are better for the Uses of the Kitchen, having as pleasant an acid Taste, and being much more succulent. These may be propagated either by Seeds, or parting of their Roots, in the same manner as the common Sort; but the Plants require more Room, for which Reason they ought not to be nearer than a Foot from each other, especially in good Ground. These are both very distinct Species, and do not vary when propagated by Seeds; the Leaves of the 2d Sort are much broader and rounder at their Extremity, than those of the 6th, whose Leaves are very long, and the Ears at their Base much larger. They grow naturally in Italy, from whence I have received their Seeds.

ACETOSELLA. See *Oxys*.

ACHILLEA, Milfoil Yarrow, or Nosebleed;

The Characters are,

It hath a compound radiated Flower, consisting of many tubulous Florets which are hermaphrodite, and compose the Disk of the Flower; the female Flowers are ranged round the Border, these have their Corolla stretched out on one Side like a Tongue, which compose the Rays, all included in one common scaly Empalement. The hermaphrodite Flowers have each free short slender Stamina, accompanying a small Germen, which is situated in the Bottom, and rests upon a downy Bed, the Germen afterward becomes a single oval Seed, having a Down adhering to it.

The Species are,

1. *ACHILLEA foliis bipinnatis nudis, laciniis linearibus dentatis*. Hort. Cliff. 413. This is the *Millefolium vulgare album*. C. B. P. 140. or common Yarrow, called also Milfoil, Stratiotes, and Nosebleed. Of this there is a Variety with purple Flowers, which is often found growing naturally in England.

2. *ACHILLEA foliis setaceis dentatis, denticulis subintegris sabulatis reflexis*. H. C. Tournesort's Eastern Sneezwort with a Lavender Cotton Leaf, and a large Flower.

3. *ACHILLEA foliis pinnatis hirsutis pinnis linearibus dentatis*. Lin. S. P. Woolly Yarrow with yellow Leaves.

4. *ACHILLEA foliis pinnatis, foliolis lanceolatis incisisserratis subtus lanigeris*. Hort. Cliff. 413. Eastern Sneezwort with hoary Tansey Leaves, and the Rays of the Flower of a pale yellow Colour of Tournesort.

5. *ACHILLEA foliis pinnatis supra decompositis, laciniis linearibus distantibus*. Tournesort's tallest Eastern Yarrow, with a Wormwood Leaf and yellow Flowers.

6. *ACHILLEA foliis pinnatifidis planis obtusis tomentosis*. Lin. Sp. Plant. 898. Broad leaved Alpine umbelliferous Wormwood of Clusius and Baubinis.

7. *ACHILLEA foliis pinnatis foliolis lineari lanceolatis basi sursum auctis*. Flor. Leyd. Prod. 176. Tournesort's Eastern Sneezwort with hoary Tansey Leaves, and a golden Flower.

8. *ACHILLEA foliis lanceolatis obtusis acutis serratis*. Hort. Cliff. 413. Sweet Maudlin.

9. *ACHILLEA*.

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9. *ACHILLEA foliis pinnatis foliolis obtusè lanceolatis serrato dentatis.* Hort. Cliff. 413. Tournefort's hoary Sneezwort with crested Pinnulæ.

10. *ACHILLEA foliis lanceolatis acuminatis argutè serratis.* Lin. Sp. Plant. 898. Common *Pharmica* or Sneezwort. Of this Sort there is a Variety with double Flowers which is preserved in Gardens.

11. *ACHILLEA foliis pinnatis planis inciso serratis extimis majoribus.* Lin. Sp. Plant. 898. Alpine Sneezwort with Feverfew Leaves of *Triumfetti* and *Barrelier*.

12. *ACHILLEA foliis pinnatis dentatis birsutis floribus glomeratis.* Lin. Sp. Plant. 899. Hoary Alpine Milfoil, with a specious Flower of *John Baubin*.

13. *ACHILLEA foliis bipinnatis, pinnis distantibus utrinque subseptenis obtusculis.* Lin. Sp. Plant. 899. Noble or Sweet Milfoil of *Tragus*.

14. *ACHILLEA foliis lanceolatis dentato serratis denticulatis tenuissimè serratis.* H. C. Alpine Sneezwort with Leaves deeply serrated, commonly called White Maudlin.

The 1st Sort here enumerated, is the common Yarrow or Milfoil, which grows naturally on Banks and by the Sides of Foot Paths in most Parts of *England*, so is rarely allowed a Place in Gardens; but being an officinal Plant, it is here mentioned to introduce the others. It is esteemed as a good vulnerary Herb, being cooling, drying, and binding, and is therefore serviceable in all Kinds of *Hæmorrhages*, whether spitting or vomiting of Blood, or bleeding at the Nose; it likewise helps a *Gonorrhœa*. Of this common Yarrow, there is a Variety with purple Flowers, which is frequently found wild in *England*; but the Plants of it seldom continue to produce purple Flowers long, when they are transplanted into Gardens, and therefore can only be allowed as an accidental Variety. The Yarrow creeps greatly by its Roots, and also multiplies by Seeds, so that it becomes a troublesome Weed, where it is permitted to grow.

The 3d Sort is often planted in Gardens for the Sake of Variety. This is of humble Growth, seldom rising more than eight or nine Inches high. The Leaves are finely cut, and are very hoary; the Flowers are of a bright yellow Colour, and continue long in Beauty. It grows naturally in the South of *France*, *Spain*, and *Italy*, but will live in the open Air in *England*, provided it be planted in a dry Soil and a warm Situation. It is increased by parting of the Roots, the best Time for which is in *March* or *October*.

The 4th, 5th, 7th, and 9th Sorts, are Natives of the Islands in the *Archipelago*. These were introduced into *France* by Dr. *Tournefort*, and from the Royal Garden at *Paris*, most of the Botanic Gardens in *Europe* have been supplied with their Seeds or Plants. The 9th Sort hath very hoary Leaves, which remain all the Year; and the Plants growing close and low, make a pretty Appearance at all Seasons. The Flowers are produced in Umbels on the Top of the Stalks, which are yellow; these are produced in *June*, *July*, *August*, and *September*, and are of long Duration, so that frequently some of them continue the greater Part of Winter. This Sort must have a dry Soil and a warm Situation, where it will endure the Cold of our ordinary Winters in the open Air, but in very severe Frost they are often

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destroyed; a few Plants therefore ought to be sheltered under a Frame in Winter, to preserve the Kind. It is propagated by Slips, which may be taken off and planted in a shady Border, any Time in Summer, when they will take Root in about six Weeks, and then may be transplanted either into Pots, or the Borders, where they are to remain. This Sort rarely perfects its Seeds in *England*.

The 4th, 5th, and 7th Sorts, are of taller Growth, propagating by their Roots, and ripening Seeds in *England*, so that they may be obtained in Plenty; and as they require little Care to cultivate them, being hardy enough to live in the open Air, they may be allowed a Place in Gardens, where by their hoary Leaves, they will make a pretty Diversity; and their Flowers continuing long in Bloom, though not the most beautiful, yet make a pretty Contrast when intermixed with others.

The 6th Sort is a very humble Plant, the Foot Stalks which support the Umbels of its Flowers, rarely rise above six Inches high. As for the Flowers themselves, they are near as large as those of the common Sneezwort, white, and growing in flat Umbels; these are produced in *June* and *July*. The Leaves of the Plant have some Likeness to those of the common Wormwood, and are very hoary, growing close to the Ground, and decaying in Autumn, so that in Winter they make no Appearance. This Species of Yarrow is propagated by parting of the Roots, either in Spring or Autumn, and should have a dry Soil, as much Wet in Winter will rot them. It never perfects its Seeds here, and therefore can only be multiplied the other Way. This Sort is a Native of the *Alps*.

The 8th Sort is commonly known by the Title of Sweet Maudlin in the Markets; it was formerly more used in Medicine than at present, so that there is scarce any of it cultivated in the Gardens for Sale; and when it is asked for, the People in the Markets commonly give the 14th Sort for it, which being a very hardy Plant, and easily propagated, is now generally sold for the other. For though the true Maudlin is hardy in respect to Cold, yet in wet Winters the Roots are often killed by Moisture, especially those which are in good Ground; but when the Plants grow out of the Joints of Walls, or in Rubbish, they will live many Years without Care. There are two other Varieties of this Plant which are found growing naturally in *Spain*, one of them having longer and more compact Umbels of Flowers, and the other hath broader Leaves and smaller Flowers; but these approaching so near to the common Sort in every other Particular, I thought it would be needless to enumerate them as distinct Species. The common Maudlin is propagated by parting of the Roots, either in Spring or Autumn; and as it ripens Seeds very well, so it may be propagated by sowing the Seeds in *April*. It flowers in *June* and *July*, and the Seeds are ripe in *September*.

The 10th Sort is the common Sneezwort; this grows wild in the Woods and other shady Places, in many Parts of *England*, so is not admitted into Gardens; this creeps greatly by its Roots, so as soon to cover a large Spot of Ground. It is sometimes used in Medicine, and in the Spring the young tender Shoots are put into Sallads, to correct the Coldness of other Herbs; and the

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Roots are used for the Tooth-ach, whence some have given the Title of Field Pellitory to this Plant. There is a Variety of this with double Flowers, which is preserved in Gardens, and is commonly known by the Title of Double Maudlin. It is the same with the common Sort, differing only in the Flower being double. When this is planted in Pots, so as to confine the Roots from creeping, the Stalks will grow closer together, and then they make a tolerable Appearance when in Flower; but where the Roots have full Liberty to run, the Stalks grow farther distant from one another, in which Case they make but an indifferent Appearance. It flowers in July and August.

The 14th Sort has some Resemblance to the 10th, but the Leaves are longer, deeper cut in on their Edges, and are of a darker green Colour. This propagates fast enough by its creeping Root, and is very hardy.

The 11th and 12th Sorts are Natives of the Alps, and consequently very hardy, and multiply by Seeds and parting of their Roots; they are perennial Plants, and will thrive in almost any Soil, but love an open Exposure. The 11th produces many Stalks which rise near three Feet high, having loose branching Umbels of white Flowers on their Top, resembling those of the common Sneezwort, but larger. The 12th Sort hath hoary Leaves, and the Umbels of its Flowers are more compact; the Stalks of this do not rise more than a Foot high. Both these deserve a Place in Gardens.

The 13th Sort approaches near the 1st, but the Leaves are of a pale Green, and not so long, or so much cut as those of the first; these have a strong sweet Scent when bruised. It is equally hardy with the first, and therefore requires little Culture.

ACHRAS, Lin. See Sapota.

ACHYRANTHES.

The Characters are,

The Empalement consists of five pointed rigid Leaves which are permanent; the Flower hath no Petals; but in the Center of the Empalement is situated the Pointal, having a bifid Stigma, attended by five Stamina, supporting small Summits. The Pointal afterward becomes a single roundish Seed, inclosed in the Empalement.

The Species are,

1. ACHYRANTHES caule erecto, calycibus reflexis spica adpressis. Fl. Zeyl. 105. Achyranthes with an upright Stalk, and a reflexed Flower Cup adhering to the Stalk.

2. ACHYRANTHES caule erecto, foliis obversis ovatis undulatis floribus reflexis, i. e. Achyranthes with an erect Stalk, obverse oval waved Leaves and reflexed Flowers.

3. ACHYRANTHES caule erecto, spica interrupta, floribus externe lanatis. Lin. Sp. Plant. 204. i. e. Achyranthes with an upright Stalk, a loose Spike, and the Outside of the Flower woolly.

4. ACHYRANTHES caule erecto spicis ovatis lateralibus calycibus lanatis. Achyranthes with an erect Stalk, and oval Spikes of Flowers produced from the Wings of the Leaves which are covered with a soft Down.

The 1st Sort has been long in the English Gardens, where it has been preserved more for the Sake of Variety, than for its Beauty or Use. It grows near three Feet high, with oblong pointed Leaves; the Flowers come out in long Spikes from the Extremity of the Branches

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which are composed of an Empalement, with a Style and five Stamina, but hath no Petals, so may be ranged under the Class of Blink Flowers. The Plants of this Sort must be raised on a hot Bed, and when they have acquired Strength, they may be transplanted into the full Ground, where they will flower in July, and their Seeds ripen in September. If these be kept in Pots, and put into a warm Green-house in Winter, they will live two or three Years; but as there is no Beauty in the Plants, so few Persons care to allow them a Place in the Green-house. This Sort grows naturally in the Islands of America, also in India and Sicily.

The Seeds of the 2d Sort I received from Malabar, which have for some Years flourished at Chelsea, and annually produced ripe Seeds, which have never varied from the Parent Plant.

The 3d and 4th Sorts grow naturally at the Cape of Good Hope, from whence I received their Seeds.

They may all be propagated in the same manner as the 1st, and will perfect their Seeds the same Year; but the Plants of the 3 last Sorts may be preserved through the Winter if placed in a Stove, for they are too tender to be kept in a Green-house where there is not artificial Heat.

ACINOS, Stone or Wild Basil.

The Characters are,

It hath Leaves like those of the lesser Basil: the Cup of the Flower is oblong and furrowed: The Flowers are produced in Bunches, on the Top of little Foot Stalks, which arise from between the Foot Stalk of the Leaf, and the Stalk of the Plants, in which it differs from Serpyllum.

The Species are,

1. ACINOS multis. J. B. Wild Basil.

2. ACINUS pulchra species. J. B. Broad leaved Austrian Wild Basil.

The 1st of these Plants is very common on dry arable Land in many Parts of England, but especially on gravelly or chalky Hills: It is an annual Plant, sowing itself, and rising again early in the Spring. It is not cultivated in Gardens, nor doth it care to grow in good Ground; but may be propagated in a dry poor Soil, by sowing the Seeds as soon as they are ripe. This Plant hath been brought to the Markets by the Herb Women for the Mountain Poley.

The 2d sort grows naturally in Austria, Istria, and Bohemia, from whence I have received the Seeds: It is preserved in curious Botanic Gardens, but is a Plant of no great Beauty or Use.

ACONITUM, Wolfsbane, or Monkshood.

The Characters are,

The Flower hath no Empalement, but consists of five unequal Petals, (which vary in different Species) the Galea (or Hood) is tubulous, and covers the other Parts of the Flower like a Friar's Cowl; the two lateral Petals, which inclose the Stamina and Style are equal: These are concave and slightly indented in the Middle. The two lower Petals are narrow and oblong: In the Bottom of the Flower are placed two Nectariums, upon which are situated the Styles; in some there are two, in others three, and some have five: These are forked, and stretched out far beyond the Stamina, which are numerous and irregular; after the Flower is past, the Germen become oblong Seed Vessels terminated in a Point,

a Point, and coalescing at their Base; these have but one Cell, which is filled with angular rough Seeds.

The Species are,

1. *ACONITUM foliis palmatis multifidis villosis*. Lin. Sp. Plant. 532. Yellow Wolfsbane or Monkhood, with palmated hairy Leaves finely divided.

2. *ACONITUM foliis palmatis nervosis glabris*. Greatest yellow Wolfsbane, with nervous smooth palmated Leaves.

3. *ACONITUM foliis multifidis laciniis semipartitis superne latis*. Hort. Cliff. 214. Lesser Wolfsbane with blue Flowers, whose under Leaves are cut into many Parts, and whose upper have broader Segments.

4. *ACONITUM floribus pentagynis*. Lin. Sp. Plant. 532. Wholefome Wolfsbane with yellow Flowers.

5. *ACONITUM foliorum laciniis linearibus superne latioribus linea exaratis*. H. C. Wolfsbane or Monkhood, with large blue Flowers.

6. *ACONITUM foliis multipartitis, spicis florum longissimis*. The common blue Monkhood, with a long Spike of Flowers.

7. *ACONITUM foliorum laciniis pinnatifidis flore maximo*. Large flowered Monkhood, or Wolfsbane of a blue purple Colour.

8. *ACONITUM foliis multipartitis laciniis linearibus incumbentibus squamosis*. Hort. Upsal. 152. Yellow Pyrenean Monkhood, or Wolfsbane, with fine cut Leaves.

9. *ACONITUM foliorum laciniis linearibus, spica florum inflexo*. Monkhood with Leaves finely jagged, and a bending Flower Spike.

10. *ACONITUM elatius, foliis palmatis flore magno albo*. Eastern Monkhood, with a tall Stalk and a large white Flower.

The 6th Sort is the most common in the English Gardens; this is cultivated for the Beauty of its long Spike of blue Flowers, which are brought to the Markets in London, toward the end of May, when it commonly flowers; so that these being intermixed with the Guelder Roses and other Flowers of the same Season, make an agreeable Variety when properly blended, to adorn Halls and other Apartments. But as most of the Species of Monkhood are a deadly Poison, not only to Men but to Brutes also, they ought not therefore to be admitted into Places where Children or ignorant Persons frequent, lest by smelling to these Flowers, they should draw some of the Farina into their Nostrils, which may prove very hurtful to them, as I can from Experience assert for Fact. We have an Account of a Man who was poisoned in the Year 1732, by eating Part of a Plant of this Kind, which by an unskilful Person was put into a Sallad instead of Celery. This is particularly mentioned in the Transactions of the Royal Society, N^o 432. Dodonæus also relates a Story of the bad Effects of one Species of Monkhood, which was recent in his Time. Some unskilful Persons had gathered the young Shoots of the blue Monkhood to eat in a Sallad, and all that eat of them were seized with terrible Symptoms, and, soon died. Dr. Turner also mentions that some Frenchmen at Antwerp eat the Shoots of this Plant for those of Masterwort, and all of them died in two Days, except two Players who threw them up by Vomit. I have known Persons who by smelling to the

Flowers, have been seized with swooning Fits, and have lost their Sight for two or three Days.

The 4th Sort is that which is made Use of in Medicine and is esteemed an Antidote to those which are poisonous. This is by some Writers titled *Antibora*, and by others *Antitbora*, as the poisonous Kinds have been called *Tbora*. Whenever therefore any of the Species of this Genus is ordered in Medicine, this is the Sort intended.

Most, if not all the other Sorts are esteemed poisonous; but those with blue Flowers are supposed to be of a much stronger Quality, than the yellow or white flowered Kinds. It is affirmed, that the Huntsmen on the Alps, who hunt the Wolves and other wild Animals, dip their Arrows in the Juice of these Plants, which renders the Wounds made by them deadly.

The 6th Sort is the first which flowers; this grows near four Feet high, and the Spikes of Flowers are upward of two Feet long, so that when it is in Flower, it makes a pretty Appearance; and being very hardy, growing in any Soil or Situation, and multiplying greatly by the Root, has induced many Persons to allow it a Place in their Gardens, for the Sake of its Flowers, who being ignorant of its dangerous Qualities, have permitted it to spread and propagate greatly. It flowers in May and June, and sometimes in cool moist Seasons, or in a shady Situation, the Flowers will continue till the Middle of July. The Seeds are ripe in September; but as this Sort multiplies so greatly by the Root, so it is rarely propagated the other Way.

The 1st and 2d Sorts are the next which flower; these come about the Middle of June, and if the Season is not warm, will continue in Flower till August. The 1st grows upward of three Feet high, and the second above four, the Spikes of Flowers too in this being much longer than the former.

The 3d Sort flowers a little later than either of those, but seldom grows more than two Feet high, and the Spikes of Flowers are much shorter than either of the two last.

The wholefome Wolfsbane flowers in the Middle of August, and often continues in Beauty till the Middle of September; the Flowers are not so large as of some other Sorts, but being of a sulphur Colour, make a pretty Appearance in the Borders of the Flower Garden. This Sort will not thrive so well under the Shade of Trees as many other Sorts will do, and therefore must have an open Exposure.

The 9th and 10th Sorts flower the Beginning of July. The 9th usually grows about four feet high, but the 10th I have seen upwards of six. This Sort is at present very rare in Europe. It was found by Dr. Tournefort in the Levant, who sent the Seeds to the Royal Garden at Paris, where it was first cultivated in Europe, and from that Garden, others have been furnished with the Seeds.

The 8th Sort flowers in July. This grows about four Feet high, having a long Spike of yellow Flowers of a middling Size, wherefore they may be allowed a Place among Shrubs, or in such Parts of the Garden as are not frequented by Children.

The 5th, 6th, and 7th Sorts flower in August, when they make a pretty Appearance, and were it not for their noxious Quality, would deserve a Place in every Garden.

There are two or three Varieties of the 5th Sort, one with white, another with rose coloured, and a third with variegated Flowers; but as these are only Varieties which often change, so I have not put them down as distinct Species, because they frequently vary in the same Plant. The *Napellus minor*, is also apt to change in the Colour of its Flower; of this Sort I have had some Plants with variegated Flowers, but they changed in two Years and became plain, nor did their Seeds produce any Plants with variegated Flowers. The 7th Sort will grow to the Height of five Feet in good Ground; the Flowers are very large, but not many upon each Spike. These are of a deep blue Colour.

All the Sorts of Monkhood may be propagated by Seeds, which should be sown early in the Spring in a shady Situation: Some of the Plants often come up the first Year, but it is generally the second Spring before they appear; therefore the Ground should be kept clean from Weeds all the following Summer, and when the Plants come up, they should be watered in dry Weather until they are fit to transplant; when they are to be carefully taken up, and planted in shady Borders, at the Distance of four inches each Way, observing to water them until they have taken good Root in the Ground; after which Time they will require no other Care but to keep them clean from Weeds, till the following Autumn, when they may be transplanted to the Places where they are to remain.

The common Monkhood will grow under the Shade of Trees, in Wilderesses or Woods, and will increase fast enough by means of its creeping Roots; but though most of the other Sorts delight in Shade, yet few of them will thrive under Trees, for which Reason they should be planted in shady Borders which are not over-hung by Trees, where they will continue much longer in Flower, and thrive better than in an open Exposure.

They may also be propagated by parting of their Roots, the best Time for which is in the Autumn, that their Roots may be well established before the Spring, otherwise they will not flower strong the first Summer.

ACONITUM HYEMALE. See Helleborus.

ACORUS, the Sweet Rush.

The Characters are,

It hath a simple cylindrical Stalk, which is closely covered with small Flowers so as to form a Sort of Catkin (or *Julus*). These Flowers have no Empalement, but are composed of six concave obtuse Petals. In the Center of the Flower is situated a swelling Germen, attended by six Stamina, which are extended beyond the Petals, and are crowned with thick double Summits, the Germen afterwards turns to a short triangular Capsule, having three Cells, in which are lodged oval oblong Seeds.

We have but one Species of this Plant, which is, ACORUS. Roy. Prod. Leyd. 6. The sweet smelling Flag or Calamus. This is the *Acorus verus sive calamus aromaticus*. C. B. P. 34. The true Acorus of the Shops.

This Plant grows naturally in standing Waters which are shallow, and is found wild in some Parts of England; particularly in Norfolk, and also near Uxbridge in Middlesex, and in several parts of the North. In Holland this Plant abounds in most of their Ditches and standing Waters. The Leaves of this Plant when broken, send forth a strong Aromatic Scent; but the Roots,

which are much stronger, have been long used in Medicine. This may be transplanted into a Garden, where if the Ground be moist, it will grow very well; but never produces its Spike, unless it grows in the Water. It loves an open Situation, and will not thrive well under the Shade of Trees. The Spikes of Flowers (which are by many Writers termed *Juli*) appear toward the latter End of June, and continue till August. When this Plant is fixed in a proper Situation, it will multiply by its creeping Roots fast enough.

The Roots which are used in Medicine, are hot and dry, opening and attenuating, and thus are esteemed good for removing Obstructions of the Liver and Spleen, to provoke Urine and the Menfes, as also to resist Putrefaction, and to be good against Pestilence.

ACRIVIOLA. See Tropæolum.

ACTÆA, Herb Christopher. *Chrisophoriana*. Tourn.

The Characters are,

The Empalement of the Flower is composed of four concave obtuse Leaves which fall off, and the Flower itself hath four Petals which are much larger than the Empalement. In the Center is placed the oval Germen, crowned with an oblique compressed Stigma, which is attended by numerous slender Stamina, crowned with double roundish Summits. After the Flower is past, the Germen becomes an oval or globular Berry, having one Cell, in which are lodged four Seeds, which are roundish on their Outside, but angular where they are joined.

The Species are,

1. ACTÆA racemo ovato fructibusque baccatis. Lin. Sp. Pl. Common Herb Christopher, or Bane Berries.

2. ACTÆA racemo ovato baccis niveis, radice tuberosa. American Herb Christopher with white Berries.

3. ACTÆA racemis longissimis fructibus unicapsularibus. Lin. Sp. Pl. 504. American black or wild Snakeroot.

The 1st Sort grows naturally in some Parts of the North: I found it in pretty great Plenty in a Wood near Kirby Lonsdale, as also near Ingleborough Hill in Yorkshire. It grows about a Foot and a Half high, the Foot Stalks of the Leaves arise from the Root, and are long; these divide into three smaller Foot Stalks, each of which divide again into three, and these have each three Lobes, so that each Leaf is composed of twenty-seven Lobes (or small Leaves). The Flower Stem which arises from the Root, is garnished with Leaves of the same form, but are smaller. On the Top of the Stalk appears the Flowers, which grow in ramose Spikes, and are of a pure White; these come out in May, and are succeeded by black shining Berries about the Size of Pease, which ripen about Michaelmas.

It is propagated by Seeds, which should be sown soon after they are ripe; for if they are kept out of the Ground till Spring, the Plants will not come up till the Year after, so that a Year will thus be lost. The Seeds should be sown on a shady Border, which must be kept clean from Weeds, otherwise the young Plants will be overborne by them and destroyed. As the Seeds seldom come up all at the same Time, so the Border in which they are sown should not be disturbed till the following Autumn, when the Plants are to be transplanted into a shady Border, where they may remain to flower. This Plant hath a perennial Root, which lasts many Years, but

but the Stalk is annual, and perishes in Autumn, soon after which is the best Time to transplant them.

The 2d Sort grows naturally in *North America*, from whence I have received the Seeds; the Leaves of this are somewhat like those of the 1st Sort, but are not so deeply indented on their Edges. The Flowers grow in a more compact Spike, and the Berries are very white and transparent when ripe; the Root of this is composed of thick Tubers, or Knobs. This is an abiding Plant, and delights in a light moist Soil, and a shady Situation; it may be propagated in the same Manner as the former.

There is also another with red Berries, which grows naturally in the same Country, but I do not know whether it be a distinct Species, or only an accidental Variety, for the Seeds which I received of this did not grow, nor have I as yet seen any of the Plants.

The 3d Sort is also a native of *America*, where it is called *Black Snakeroot*, to distinguish it from the common. This Plant hath large compound Leaves, which arise immediately from the Root, and are branched after the same Manner as the first Sort. The Flower Stems frequently rise to the Height of four or five Feet, being terminated by a long Spike of white Flowers, which is reflexed at the Top. This flowers in *June*, but I have not yet seen any Seeds produced in *England*. During the Time of its flowering, the Plant makes a good Appearance in a Garden, and therefore deserves a Place in the shady Borders, or among Shrubs, where if it be not over-hung by them, it thrives very well, and being hardy, will require no other Care than the Shrubs themselves. It may be propagated by parting the Roots; the best Time for which, is soon after the leaves decay in Autumn; it loves a moist light Soil, and a shady Situation.

The Root of this Plant is greatly used by Apothecaries and Physicians, in *North America*, in many Disorders, and is supposed to be an Antidote against Poison, or the biting of the Rattle-Snake.

ADANSONIA, *Ethiopian* four Gourd.

This Plant is so named from one Mr. *Adanson*, a French Surgeon, who resided some Years at *Senegal* in *Africa*, and during that Time made several Discoveries in Natural History, and brought home a curious Collection of Seeds, and many Drawings of Plants, Animals, and Insects, which are engraving at *Paris*, and will be published with his Observations; and from him we may expect to have the Characters of this Plant truly exhibited; for though the Plants have been many Years in *England*, yet none of them have produced Flowers, so that we are at a loss for the Characters. The Fruit I have seen, which is large, of an oval Form, having a hard Shell like a Gourd, which is covered over with a soft Down; the Seeds are lodged in a soft Pulp, which becomes hard and brittle as the Shell dries; these are shaped almost like the Nuts of Chocolate, and are of a dark Colour.

We have but one Species at present in *England*, viz.

ADANSONIA foliis inferioribus simplicibus, superioribus trilobatis vel quinquelobatis, caule erecto arboreo. Adansonia with under Leaves simple, and the upper Leaves divided into three or five Lobes, and an erect Stem.

The young Branches of these Trees have single spear-shaped Leaves towards their lower Part, but at their Extremities the Leaves have some three, and others five Lobes, of the same Size and Form as the lower,

which are disposed like a Hand; these are entire, ending in a Point, and fall off in Winter. The Stems are large and woody, but of a soft Texture, and have a large Swelling near the Root.

This Plant is propagated by Seeds, which must be procured from the Country where it grows naturally (for it doth not produce any in *Europe*) the Seeds must be sown in Pots, and plunged into a hot Bed, where, in about six Weeks, the Plants will come up, and in a short Time after be fit to transplant, when they should be each planted into a separate Pot, filled with a light sandy Earth, and plunged into a fresh hot Bed, observing to shade them until they have taken new Root, after which Time they should have free Air admitted to them every Day in warm Weather, but must be sparingly watered; for as their Stems are soft (especially when young) too much wet will cause them to rot. As the Plants advance in their Growth, they are to be shifted into larger Pots, but must constantly be plunged into the Bark Bed, being too tender to thrive in this Country without this artificial Heat, therefore they must constantly remain in the Stove with other tender exotic Plants.

We had some Plants of this Sort in several Gardens, which were raised from Seeds obtained from *Grand Cairo* in the Year 1724, by the late Dr. *William Sherard*, many of which were grown to the Height of eighteen Feet; but in the severe Winter 1740, they were all lost, and since that Time there has not been any of the Seeds brought to *England*, till the Return of Mr. *Adanson* to *Paris*, who sent some of the Seeds over here, which have succeeded, and many of the Plants are now upwards of six Feet high.

ADENANTHERA, Bastard Flower-fence.

The Characters are,

The Emplacement of the Flower is of one Leaf, slightly cut into five at the Top; the Flower is of the bell-shaped Kind, and is composed of five Petals, which are reflexed and concave on their under side. In the Center is situated an oblong Germen, supporting a Style crowned with a single Stigma; this is attended by ten erect Stamina of the same Length, which are crowned with roundish Summits; after the Flower is past, the Germen becomes a long compressed Pod, containing many convex smooth Seeds, placed at a Distance from each other.

We have but one Species in the *English* Gardens, at present, viz.

ADENANTHERA foliis decompositis. Prod. Leyd. 462. Bastard Flower-fence with decomposed Leaves.

There is another Species of this Kind with scarlet Seeds, but this is not in the *England* Gardens at present. I have several Times received the Seeds of it from *India*, but they have been so old as to have lost their growing Quality, though by the Shape of the Seeds, they seem to be of this Genus.

The Sort here mentioned grows to a very large Tree in its native Country, but it is so tender as to require a Stove to preserve it through the Winter in *England*, so that there are no Plants of any large Size in the *English* Gardens at present, but the young Plants which are not more than two Feet high, have large branching Leaves, composed of many equal Divisions, and each of these garnished with small oval Leaves, which are placed alternately on the mid Rib, and are of a deep green

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green Colour. The Stems of the Plants are woody, and of a brown Colour, the Leaves continue all the Year. There hath not been any Flowers produced in England as yet, but by some dried Samples which were brought from India, they seem to be small, and of little Beauty; the fine branching Leaves of the Plant, however, make a very handsome Appearance in the Stove. The Seeds are of a shining black Colour, and are somewhat larger than those of the great Lentil, and nearly of the same shape. This Plant must be raised on a hot Bed, and afterwards placed in the Bark Stove with other tender Exotics.

ADHATODA. See *Jussiaea*.

ADIANTHUM, i. e. Maidenhair.

The Characters are,

This Genus is distinguished from the other capillary Plants by the Fructification, being confusedly joined in oval Spots, and the Points of the Leaves reflexed.

The Species are,

1. ADIANTHUM frondibus decompositis foliis alternis pinnis cuneiformibus lobatis pedicellatis. Lin. Sp. Plant. 1096. The true Maidenhair.

2. ADIANTHUM fronde pedata foliis pinnatis pinnis antice gibbis incisive fructificationibus. Lin. Sp. Plant. 1095. American Maidenhair.

3. ADIANTHUM frondibus supradecompositis foliis alternis, pinnis rhombeis incisive utrinque fructificationibus. Lin. Sp. P. Largest black American Maidenhair.

There are a great many Species of this Genus, which are Natives of the East and West-Indies; these greatly differ in Size and Form from each other. I have upwards of thirty distinct Species in my Collection of dried Plants, which to enumerate in this Place, would be superfluous, as they have not been introduced into the English Gardens. The three Sorts here mentioned, are all that I have seen growing in England.

The 1st Sort is the true Maidenhair, which is directed to be used in Medicine; but as it is not natural to England, the *Trichomanes* is usually substituted for it, which is found growing wild in Plenty in several Parts of England. The other is a Native of the South of France, Italy, and the Levant. It usually grows out of the Joints of Walls, and the Fissures of Rocks, so that whoever is inclinable to keep this Plant in his Garden, should plant it in Pots filled with gravel and lime Rubbish, in which it will thrive better than in good Earth; but the Pots must be sheltered under a Frame in Winter, otherwise the Plants are often killed by Frost.

The 2d Sort is often preserved in Gardens for the sake of Variety; this may be preserved in Pots, and treated in the same Manner as the former, for although it will live through the Winter in the open Air in moderate Seasons, yet in severe Frost it is often destroyed. This grows naturally in Canada in such Quantities, that the French send it from thence in Package for other Goods, and the Apothecaries at Paris use it for the Maidenhair in all their Compositions, in which that is ordered.

The 3d Sort grows naturally in very warm Countries; I received it from Jamaica in a Tub of Earth among other Plants; this Sort will not thrive in England, unless it be preserved in a Stove, where its shining black Stalks, and odd shaped Leaves, will afford an agreeable Variety among other exotic Plants.

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ADONIS, or FLOS ADONIS, Bird's-eye, or Pheasant's-eye.

The Characters are,

The Empalement of the Flower is composed of five concave obtuse Leaves which fall off; the Flower is composed in some Species of five Petals, and in others of twelve or fourteen, these expand in form of a Rose; in the Center there are many Germina collected in a Head, which are attended by a great Number of short Stamina, crowned by oblong inflexed Summits; after the Flower is past, the Germina become so many naked Seeds, closely adhering to the Pedicle, and forming an obtuse Spike.

The Species are,

1. ADONIS floribus octopetalis fructibus subeylindricis. Hort. Upsal. 156. The common Adonis, or Flos Adonis, with small red Flowers, of late called Red Morocco.

2. ADONIS floribus pentapetalis fructibus ovatis. The annual Adonis with pale yellow Flowers.

3. ADONIS floribus polypetalis, fructibus obtusis, radice perenne. Perennial Adonis with yellow Flowers, by some titled fennel-leaved black Hellebore.

There is a Variety of the 1st Sort, which hath been long cultivated in Gardens; the Flowers are larger, and the Leaves shorter, than those of the wild Sort, but, from repeated Trials of sowing their Seeds separately, they appear to be only accidental Variations arising from Culture, and may be properly esteemed as such.

The 2d Sort is undoubtedly a distinct Species, although Dr. Linnaeus supposed it to be only a Variety of the 1st. I cultivated both above thirty Years, and never observed the 2d to vary in the Shape of its Leaves, Colour, Make of the Flower, or Growth of the Plants, which are much taller than the 1st, the Leaves thinner, sparingly set on the Stalks, and of a lighter Colour.

Both these Sorts are annual, and if the Seeds are sown in Autumn, the Plants will come up the following Spring; but when the Seeds are not sown till Spring, they rarely come up the same Year. So that when the Seeds are permitted to fall on the Ground, they generally succeed better than when sown by Art. The 1st Sort grows naturally in Kent, particularly by the Sides of the River Medway, between Rochester and Maidstone, where it is found in great Plenty in the Fields which are sown with Wheat, but in the intermediate Fields which are sown with Spring Corn, there is rarely a Plant of it to be found, which shews the Necessity of sowing the Seeds in Autumn; for those Fields of Spring Corn, if suffered to remain undisturbed after the Harvest, will abound with this Plant the following Year. For some Years past great Quantities of the Flowers of this Plant have been brought to London, and sold in the Streets by the Name of Red Morocco. Both these annual Sorts flower in the Beginning of June, and the Seeds ripen in August and September; this must be understood of those Plants which arise from Seeds sown in Autumn, or such as have fallen to the Ground, for when any Plants come up from the Seeds sown in the Spring (which sometimes happen) they do not flower till July or August, and their Seeds seldom ripen before October.

These Plants will thrive best in a light Soil, but may be sown in any Situation, so that by sowing some in a warm Situation, and others in the Shade, they may be continued longer in Flower. The Seeds ought to be

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sown where the Plants are to remain to flower, for they do not bear transplanting well, and therefore they should be sown in small Patches in the Borders of the Flower Garden, and when the Plants come up, they should be thinned, leaving five or six in each Patch, which will make a better Appearance than where they grow single.

The 3d Sort hath a perennial Root, and an annual Stalk. This grows naturally on the Mountains of *Bohemia*, *Prussia*, and other Parts of *Germany*, but has been long cultivated in Gardens. It produces its Flowers the latter End of *March*, or the Beginning of *April*, according to the Forwardness of the Season; the Stalks rise about a Foot and a Half high, and when the Roots are large, and have stood unremoved for some Years, they will put out a great Number of Stalks from each Root; these are garnished with fine slender Leaves, placed in Clusters at Intervals. At the Top of each Stalk, is one large yellow Flower, composed of an unequal Number of Petals, the Center of which is occupied by a great Number of Germen, surrounded by many Stamina; after the Flowers drop, the Germen become naked Seeds, closely adhering to the Foot Stalk, forming an obtuse Spike. These ripen in *August*, and should be sown soon after, otherwise they seldom succeed.

When the Plants come up they must be carefully kept clean from Weeds, and, in very dry Weather, if they are now and then refreshed with Water, it will promote their Growth. They should remain in the Place where they were sown until the second Year, for they make but slow Progress while young. The best Time to transplant them is in Autumn, and they ought to be planted where they are to remain, for if often removed they will not produce many Flowers, nor those Flowers be so strong as on the Plants which are unremoved. The Roots of this Plant are, by the *Germans*, used for the true Black Hellebore.

ADOXA, Tuberous Moschatel, or Hollow Root.

The Characters are,

The Empalement of the Flower is bifid and permanent, upon which rests the Germen; the Flower is of one Leaf, which is cut into four acute Segments, the Germen is situated in the Center, supporting four erect Styles, these are attended by eight Stamina, crowned by roundish Summits; after the Flower is past, the Germen becomes a round Berry, resting on the Empalement, which hath four Cells, each containing a single compressed Seed.

We know but one Species of this Genus, viz.

ADOXA. *Hort. Cliff.* 152. Bulbous Fumitory Hollow Root, or Tuberous Moschatel.

This Plant grows naturally in shady Woods in divers Parts of *England*: I have gathered it on the Top of *Hampstead-hill* among the Bushes, near the Wood; it is a low Plant, seldom rising more than four Inches high, the Leaves resemble those of the bulbous Fumitory, the Flower Stalk arises from the Root, upon the Top of which is placed four or five small Flowers of an herbaceous Colour; these appear the Beginning of *April*, and the Berries ripen in *May*, soon after which the Leaves decay. There is little Beauty in this Plant, but as some are fond of collecting the several Kinds of Plants in their Gardens, which are not commonly found, so it is mentioned here. The Roots may be transplanted any time after the Leaves are decayed, till Winter; the Root is tuberous, and shaped somewhat like a Tooth.

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It must be planted in the Shade, under Shrubs, for if it be exposed to the open Sun it will not thrive. The Leaves and Flowers smell like Musk, from whence it has been called *Musk-Crowfoot*.

ÆSCHYNOMENE, Bastard Sensitive Plant.

The Characters are,

The Empalement of the Flower consists of one Leaf, cut into two equal Segments, the upper being bifid, and the lower trifid; the Flower is of the Butterfly Kind, the Standard being large and heart-shaped; the two Wings are oval, and shorter than the Standard; the Keel is Moon-shaped and pointed. In the Bottom of the Flower is situated an oblong hairy Germen, supporting an arched Style, attended by ten Stamina, nine of which coalesce, and the other is separated from them; after the Flower is past, the Germen becomes a long, plane, jointed Pod, which separates at the Joints, in each of which is lodged one kidney-shaped Seed.

The Species are,

1. **ÆSCHYNOMENE** caule scabro leguminum articulis medio scabris. *Lin. Sp. Plant.* 713. Bastard Sensitive Plant with a rough Stalk, and a jointed Pod.

2. **ÆSCHYNOMENE** caule hispido foliis acuminatis, leguminum articulis suborbiculatis. *Prod. Leyd.* 384. Bastard Sensitive Plant with a prickly Stalk, pointed Leaves, and jointed Pods half rounded.

3. **ÆSCHYNOMENE** caule lævi arboreo leguminum articulis semicordatis glabris. *P. L.* Bastard Sensitive Plant with a smooth tree-like Stalk, and smooth jointed Pods.

4. **ÆSCHYNOMENE** leguminibus subæqualibus lævibus, *L. S. P.* Bastard Sensitive Plant with equal smooth Pods.

5. **ÆSCHYNOMENE** caule lævi foliis obtusis glabris leguminum articulatis submarginatis. Bastard Sensitive Plant with a smooth Stalk, obtuse smooth Leaves, and jointed Pods, bordered on one Side.

They are all Natives of warm Countries, the Seeds of the 1st, 4th, and 5th Sorts, I have received from *Africa*, and those of the 2d and 3d from *America*.

The 1st Sort rises to the Height of four or five Feet, having a single herbaceous Stalk, which is in some Parts rough; the Leaves come out on every Side at the Top, forming a sort of Head; these are long, and composed of a great Number of small Leaves (or Pinnæ) placed alternately, being between three and four Inches long, and a Quarter of an Inch broad, smooth, and of a glaucous Colour. The Flowers come out from between the Leaves, two or three together upon long Foot Stalks; these are yellow, and shaped like those of Pease. After the Flower is past, the Germen becomes a flat jointed Pod, about four Inches long, which, when ripe, parts at the Joints, and in each Division is lodged a single kidney-shaped Seed.

The 2d Sort seldom rises more than two Feet high, but sends out three or four lateral Branches; these are clothed with narrow winged Leaves, whose Pinnæ are placed alternate on the Midrib, and are hairy, as is also the Stalk. The Flowers come out from the Wings of the Leaves upon branching Foot Stalks, five or six together, each having a short Foot Stalk; these are much less than those of the 1st Sort, and of a paler yellow Colour. After the Flowers are past, the Germen becomes a Pod, which is jointed, in some there are three, and in others five swelling Divisions, in each of which is lodged a single kidney-shaped Seed.

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The 3d Sort grows to the Height of six or seven Feet, with a single smooth Stem; the Leaves come out towards the Top of the Stalk, as in the 1st Sort, these are smooth, and composed of many Pinnæ, placed alternate on the Midrib; the Flowers come out from the Wings of the Leaves, two or three together, being of a Copper Colour, and as large as those of the 1st Sort; after the Flowers are past, the Germen becomes a smooth jointed Pod, each Division being half heart-shaped, and inclosing a single kidney-shaped Seed.

The 4th Sort grows naturally in *Egypt*, and on the Coast of *Guinea*, whence I received the Seeds. This hath woody Stems and Branches, which are garnished with smooth Leaves, composed of many blunt Pinnæ, set by opposite Pairs; the Flowers come out from the Wings of the Leaves in long Spikes, which hang downward, of a deep yellow Colour, and smaller than those of the former Sort. After the Flower is past, the Germen becomes a taper-pointed smooth Pod, not jointed.

The 5th Sort rises about three Feet high, with a single herbaceous Stalk, seldom putting out any side Branches. The Flowers come out from the Wings of the Leaves, sometimes single, and other Times two or three upon each Foot Stalk, these are small, and of a pale yellow Colour; after the Flower is past, the Germen becomes a long falcated Pod, divided into eleven, or thirteen Partitions, each containing a single kidney-shaped Seed.

The 1st, 3d, and 4th Sorts will live through the Winter in *England*, if placed in a warm Stove; but as their Stalks are succulent, so they must be kept dry in Winter, otherwise they are very subject to rot. They should be plunged into the Tan Bed, for when put into a dry Stove, the Fibres of their Roots soon grow dry, and their Leaves hang and fade, which shews their Want of Moisture, but when they have Water given them, it causes the tender fibres of their Roots to perish, and the Plants soon after decay.

These are all propagated by Seeds, which should be sown on a hot Bed early in the Spring, and when the Plants have Strength enough to be removed, they should be put each into a separate small Pot, filled with light Earth, and plunged into a fresh hot Bed, to bring them forward; and as they advance in their Growth, they should be shifted into large Pots, but great Care should be taken not to over pot them, for if the Pots are too large, the Plants will not thrive. The 1st, 2d, and 5th Sorts are annual, therefore must be brought forward early in the Year, otherwise they will not perfect their Seeds; but the 3d and 4th Sorts may be preserved through the Winter, and will flower early the following Summer, so that their Seeds will ripen in the Autumn. The other Sorts usually flower in *July*, and their Seeds ripen in *October*.

ÆSCULUS. *Lin. Gen.* The Horse Chestnut.

The Characters are,

The Empalement of the Flower is swelling, and consists of one Leaf, slightly cut into five Segments; the Flower is composed of five roundish Petals, folded at their Border, and waved; these are narrow at their Base, where they are inserted in the Empalement, but spread open above. In the Center is placed a roundish Germen, having a single Style, crowned with a pointed Stigma, this is attended by seven

Stamina, which extend to the Length of the Petals, and are declining, these are crowned with upright Summits. When the Flower is past, the Empalement becomes a thick, roundish echinated Capsule, opening into three Cells, in one or two of which are lodged globular Seeds.

We have but one Species of this Genus, viz.

ÆSCULUS floribus heptandriis. *Hort. Upsal* 92. The Common Horse Chestnut.

We have two Varieties of this Tree, one with white blotched Leaves, and the other with yellow; but as these are accidental Variations, so I shall only mention them here, to inform those who are ignorant: That they may be budded upon the common Sort, and if planted in poor Land, these variegated Leaves will abide, but when in good Ground, and the Trees grow vigorous, become plain again.

The Horse Chestnut was brought from the Northern Parts of *Asia* about the Year 1550, and was sent to *Vienna* about the Year 1588.

This Tree was in much greater esteem formerly than at present, for since it is become so very common, few Persons regard it. What has occasioned its being so seldom planted, is the Decay of the Leaves early in Summer; so that when they are growing in Gardens, their Leaves frequently begin to fall in *July*, and occasion a Litter from that Time, until all the Leaves are fallen; but notwithstanding this Inconvenience, the Tree has great Merit, for it affords a noble Shade in Summer; and during the Time of its flowering, there is no Tree has greater Beauty, for the Extremity of the Branches are terminated by fine Spikes of Flowers, so that every Part of the Tree seems covered with them; which are finely spotted with a Rose Colour, and these being intermixed with the green Leaves make a Noble Appearance.

The former Method of planting these Trees in Avenues and strait Lines, has also been in some Measure the occasion of their present disrepute, because in such Plantations great Part of their Beauty is lost; for when their Branches are so far extended as to nearly meet, most of the Flowers which are produced are hid from Sight, and as the Trees grow larger, so their Branches will interfere with each other, and produce few Flowers; the Leaves will also decay much sooner in close Plantations than on single Trees: Therefore the great Beauty of them is to stand single at a Distance from all other Trees, upon Lawns of Grass in Parks, where their Fruit will be of great Service to Deer, who are very fond of them. In such Situations, when the Trees are grown to a good Size, there is not a finer Object than they will afford during their Season of flowering which is in *May*, and when the Weather is moderate, they will continue in Beauty near a Month.

As this Tree is quick in its Growth, so in a few Years they will arrive to a Size large enough to afford a good Shade in Summer, as also to produce Plenty of Flowers. I have known Trees which were raised from Nuts, in twelve or fourteen Years, large enough to shade two or three Chairs under the Spread of their Branches, and have been covered with Flowers in the Season, so that few Trees make greater Progress than these. But as their Wood is of little Value, so the Trees should not be propagated in too great Plenty: A few therefore of them

them placed at proper Distances in Parks for Ornament is as many as should be preserved, the Wood not being fit even for burning, nor any other Use that I know of.

These Trees are propagated by sowing of the Nuts, the best Time for doing this is early in the Spring; but the Nuts should be preserved in Sand during the Winter, otherwise they are apt to grow mouldy and rot. They may indeed be planted in Autumn, but then they will be in Danger of rotting if the Winter should prove very wet, as also of being removed by Vermin.

When the Nuts succeed, and have a proper Soil, the Plants will shoot near a Foot the first Summer; so that where they grow pretty close together, it will be proper to transplant them the following Autumn, when they ought to be planted in Rows at three Feet Distance, and one Foot asunder in the Rows: In this Nursery they may remain two Years, by which Time they will be fit to plant where they are designed to be continued; for the younger these Trees are planted out, the larger they will grow. There are many who will object to their being planted out young in Parks, because they will require a Fence to secure them against Cattle; this will also be necessary, whatever Size they are when planted; and if large, they must be well staked to prevent their being displaced by strong Winds, which is another Expence: But when we consider how much faster a young Tree will grow, than one removed at a greater Age, there can be no Excuse for planting large Trees.

This Tree is not very nice in its Culture, for it requires little Care in the Management, and will thrive in most Soils and Situations, but in a sandy Loam they make the greatest Progress; and if the Soil be inclining to Moisture, the Leaves will continue in Verdure much longer, than in very dry Ground.

When these Trees are transplanted, their Roots should be preserved as entire as possible, for they do not succeed well, when torn or cut; nor should any of the Branches be shortened, for there is scarce any Tree, which will not bear Amputation better than this; so that when any Branches are by Accident broken, they should be cut off close to the Stem, that the Wound may heal over.

There is something very singular in the Growth of these Trees, which is the whole Shoot being formed in less than three Weeks, after the Buds are opened; in which Time I have measured Shoots a Foot and a half long, with their Leaves fully expanded: And no sooner are the Flowers fallen, than the Buds for the succeeding Year are formed, which continue swelling till Autumn: at which Time the folding Covers are spread over with a thick tenacious Juice, which serves as a Pigment to defend the tender Buds from the Frost and Rain in Winter; but upon the first Return of Warmth in the Spring, this melts and runs off, whereby the Bud is at full Liberty to extend: And it is remarkable that this Pigment, never hardens so as to injure the tender Buds, which are always formed at the Extremity of the former Year's Shoot; a plain Direction not to shorten them, for by so doing, the future Shoots are entirely cut off.

In Turkey the Nuts of this Tree are ground, and mixed with the Provender for their Horses, especially those which are troubled with Coughs, or are broken winded; in both which disorders they are accounted very good. Deer are very fond of the Fruit, and at the Time of

their ripening will keep much about the Trees, and greedily devour them as they fall.

There are some old Trees now standing, which were planted single, at a great Distance from any other; these are grown to a very large Size, and their Heads form a natural Parabola, and when their Flowers are in full Beauty, there is not any Tree yet known in Europe, which makes so fine an Appearance. I have measured some of these Trees, whose Branches have extended more than thirty Feet in Diameter, and their Heads have been so close, as to afford a perfect Shade in the hottest Seasons. These were planted in 1679, as appears by some Writings which are in the Possession of the Persons, who have now the Property of the Land where they grow: So that although they are of quick Growth, yet they are not of short Duration.

AGAVE. Common American Aloe.

The Characters are,

The Flower has no Empalement, is Funnel-shaped, and of one Leaf which is cut at the Brim into six equal Segments; the oblong Germen is situated below the Flower, upon which rests the slender Style, which is extended a considerable Length beyond the Petals, and is crowned by a three cornered Stigma. This is attended by six erect Stamina of the same Length, crowned by narrow Summits; after the Flower is past, the Germen becomes an oblong three cornered Seed Vessel, having three Cells, which are filled with flat Seeds.

The Species are.

1. AGAVE foliis dentato-spinosis scapo ramoso. The common great American Aloe, with a branching Stalk.
2. AGAVE foliis dentato-spinosis scapo simplicissimo. L. S. P. 323. Great American Aloe with a simple Stalk.
3. AGAVE foliis integerrimis. Gen. Nov. Lin. Sp. Pl. 323. American Aloe with stiff whole Leaves.
4. AGAVE radice tuberosâ foliis longissimis marginibus spinosis. Smaller American Aloe with a tuberous Root and very long Leaves, with Spines on their Edges.
5. AGAVE foliis lanceolatis reflexis, marginibus dentatis. American Aloe with spear-shaped reflexed Leaves, whose Edges are indented.
6. AGAVE foliis longis erectis latè virentibus, marginibus fuscis minimè serratis. American Aloe with long deep green Leaves, edged with brown, and very slightly sawed. This is called in America Karatto.
7. AGAVE foliis oblongis marginibus spinosissimis nigricantibus. American Aloe with oblong Leaves, whose Edges are closely beset with black Spines, commonly called Broad-leaved Aloe from Vera Cruz.
8. AGAVE foliis lineari lanceolatis integerrimis rigidis aculeo terminatis. Narrow-leaved Aloe from Vera Cruz.

This Sort here mentioned has been long preserved in the English Gardens, where of late Years there hath been several of the Plants in Flower. The Stems of this when the Plants are vigorous, generally rise upward of twenty Feet high, and branch out on every Side, so as to form a kind of Pyramid: The slender Shoots being garnished with greenish yellow Flowers, which stand erect, and come out in thick Clusters at every Joint. These have six long Stamina, crowned with yellow Summits, and placed round the Style, which is also extended to the same Length as the Stamina. After the Flowers fall away, the Germen which is situated be-

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neath the Flower, becomes an oblong triangular Vessel, divided into three Cells, filled with compressed Seeds; but these do not come to Maturity in *England*.

When these Plants flower, they make a fine Appearance, and continue a long time in Beauty, if they are protected from the cold in Autumn, as there will be a Succession of new Flowers produced, for near three Months, in favourable Seasons. It has been generally believed, that this Plant doth not flower until it is a hundred Years old; but this is a great Mistake, for the Time of its flowering depends on the Growth of the Plants; so that in hot Countries where they grow fast, and expand many Leaves every Season, they will flower in a few Years; but in colder Climates, where their Growth is slow it will be much longer before they shoot up their Stem. There is a Variety of this Sort with striped Leaves, which is now pretty common in the *English* Gardens.

The Plants of the 2d Sort are so like those of the 1st, as not to be distinguished from them, but by good Judges. The principal Difference is, the Leaves of this are narrower toward their Extremity, and of a paler Colour: The Stems of this Sort do not rise so high as the first, nor do they branch in the same Manner, but the Flowers are collected into a close Head at the Top; they are however of the same Shape and Colour. There has been three or four Plants of this Sort, which have lately flowered in *England*; one of which was in the *Chelsea* Garden a few Years past. This Sort seldom puts out so many Offsets as the common Aloes.

The 7th Sort greatly resembles these, so that many Persons have supposed it to be the same. But the Leaves of this are much thinner, the Indentures on their Edges abundantly closer, and not so deep, as in either of the former; the Spines too are blacker. How this differs from the others in flower I know not, as none of their Flowers have been produced in *England*.

These three Sorts are hardy. I have known Plants of the 1st Sort live in the open Air for some Years in mild Seasons, but in severe Winters they are always killed, if not sheltered in that Season. They are propagated by Offsets, which the 1st Sort sends out in Plenty, but the third seldom puts out any; so these may be increased by taking off some of the larger Roots, at the Time when the Plants are shifted; planting them in Pots filled with light sandy Earth, they will shoot out and become good Plants, as I have often experienced. The 2d Sort generally puts out Suckers enough for Propagation, though not in so great Plenty as the 1st. All these should be planted in Pots filled with light sandy Earth, and housed in Winter with Oranges, Myrtles, &c. and during that Season, should have but little Wet. In the Summer they must be placed abroad in the open Air, where they may remain till toward the End of *October*, when they should be housed again. The 7th Sort being a little tenderer than the other two, should be put into the Green-house before them, and may stay there a little longer in the Spring.

The 3d Sort hath long narrow stiff Leaves, of a pale green Colour, not indented on their Edges, but frequently a little waved; the Side Leaves spread open, but those in the Center fold closely over each other, and strictly surround the Bud. The Plants of this Sort rarely grow more than three Feet high, but the Flower

Stem rises near twenty, and branches out much like that of the first, but more horizontally; the Flowers are of the same Shape, but smaller, and of a greener Colour: After the Flowers are past, instead of Seed Vessels, young Plants succeed to every Flower, so that all the Branches are closely beset with them. There was a Plant of this Kind which flowered in the *Chelsea* Garden 1755, the Stem of which begun to shoot the Beginning of *October*, and by the End of that Month was upward of ten Feet high, by the End of *November* it was near twenty, and the lower lateral Branches were upward of four Feet long, the others decreasing gradually so as to form a regular Pyramid. In *December* the Stalks were closely garnished with Flowers, and in the Spring after the Flowers dropped off; they were succeeded by young Plants, which as they fell off and dropped into the Pots which stood near, put out Roots and became good Plants. This Sort never produces Offsets from the Root, so that it cannot be increased but when it flowers, at which Time there will be Plenty enough; the old Plant presently after dies.

The 4th Sort hath Leaves somewhat like the 3d in Shape and Colour, but they are indented on their Edges, and each Indenture terminates in a Spine; the Root of this Sort is thick, and swells just above the Surface of the Ground; in other Respects it agrees with the former. This Sort hath not flowered in *England*, therefore I cannot tell how it differs in its Flowers from the other. I have raised this from Seeds which were sent me from *America*, but the Plants never put out Suckers from the Roots, so that it can only be propagated by Seeds. Dr. *Linnaeus* supposes it to be the same with the 3d Species, but whoever sees the Plants, will not doubt of their being different.

The 5th Sort never grows to a large Size, the Leaves of it are seldom more than a Foot and a Half long, and about two Inches and a Half broad at their Base; these end in a slender Spine, being slightly indented on their Edges; they are also reflexed backward toward their Extremity, and are of a dark green Colour. The Flower Stem rises about twelve Feet high, and branches out toward the Top in the same Manner as the 3d Sort; the Flowers are nearly of the same Size and Colour as those of the 3d, and after they fall off, are succeeded by young Plants in the same Manner. A Plant of this Kind flowered in the Garden at *Chelsea*, in *December* 1754. This never produces any Suckers from the Root, so cannot be increased until it flowers.

The Leaves of the 6th Sort, are from two Feet and a Half to three Feet long, and about three Inches broad, being of a dark green Colour ending in a black Spine; the Borders of the Leaves are of a brownish red Colour, and slightly ferrated. These stand more erect than in the other Species; but as this Sort hath not flowered in *England*, so I cannot say how it differs from the other. The Plants of it were sent me from *St. Christophers* by the Title of *Koratto*, which I suppose is given indifferently to other Species of this Genus; for I have frequently heard the Inhabitants of *America* call the common great Aloe by the same Name.

The 8th Sort hath long narrow stiff Leaves, which are entire, and are terminated by a stiff black Spine. These Leaves are seldom more than two Feet long, and little

little more than an Inch broad, being of a glaucous Colour: The Side Leaves stand almost horizontally, but the center Leaves are folded over each other, and inclose the Flower-bud; it never puts out Suckers: I have not seen any Plants of this Kind in Flower, although there are many of them in the *Englisb* Gardens, of a considerable Age.

The 3d, 4th, 5th, 6th, and 8th Sorts, are much tenderer than the others, so cannot be preserved through the Winter in *England*, unless in a warm Stove; nor will they thrive if set abroad in Summer, therefore they should constantly remain in the Stove, observing to let them enjoy a great Share of free Air in warm Weather. They require a light sandy Earth, and very little Wet in Winter; but in warm Weather, may be gently watered twice a Week, which is as often as is necessary; for much Water rots their Roots, and then their Leaves will decay and Insects infect them. They should be shifted every Summer into fresh Earth, but must not be put into large Pots, for unless their Roots are confined, the Plants will not thrive.

AGERATUM, Bastard Hemp Agrimony.

The Characters are,

The Flowers are included in one common oblong Empalement, which is composed of many Scales. These are uniform, tubulous, and hermaphrodite, and little longer than the Empalement, each being cut at their Margin into five Segments, which spread open. Every one of these has five slender Stamina, crowned with cylindrical Summits: In the Center of the Flower is situated an oblong Germen supporting a slender Style crowned by two fine Stygmata; the Germen afterwards becomes an oblong angular Seed, crowned with its proper little Cup, cut into five narrow Segments, which spread open. The Receptacle of the Seed is small, naked, and convex.

The Species are,

1. *AGERATUM foliis ovatis caule piloso.* Bastard Hemp Agrimony, with oval Leaves and a hairy Stalk.

2. *AGERATUM foliis oppositis petiolatis crenatis, caule hirsuto.* Bastard Hemp Agrimony, with Leaves having long Foot Stalks placed opposite, whose Edges are bluntly indented, and a hairy Stalk.

3. *AGERATUM foliis ovato cordatis rugosis floralibus alternis, caule glabro.* *Lin. Sp. Pl.* Bastard Hemp Agrimony, with rough oval Heart-shaped Leaves, Flower Branches growing alternate, and a smooth Stalk.

The two 1st are annual Plants; the Seeds of these must be sown on a hot Bed in the Spring, and when the Plants are come up and are strong enough to remove, they should be transplanted into another moderate hot Bed, observing to water and shade them until they have taken Root; after which Time, they must have a good Share of Air in warm Weather, otherwise they will grow up very weak. In June they should be inured to bear the open Air, toward the Middle of which Month, they may be transplanted into the full Ground, where they will begin to flower in July, and continue flowering till the Frosts in Autumn destroy them. The Seeds ripen in September and October, and when any of them scatter upon the Ground, and the same Earth happens to be put on a hot Bed the following Spring, the Plants will come up in great Plenty, as they frequently do in the open Air; but these Plants will be too late to produce good Seeds, unless the Summer proves warm.

The 1st Sort grows naturally in *Africa*, and also in the Islands of *America*; for in Tubs of Earth which I received with Plants from *Jamaica*, *Barbadoes*, and *Antigua*, I have had Plenty of the Plants arise, from Seeds which were scattered on the Ground. The 2d Sort was found growing naturally at *La Vera Cruz*, by the late Dr. *William Houstoun*, who sent the Seeds to *Europe*, which have so well succeeded in many Gardens, as to become a Weed in the hot Beds. There is a Variety of this with white Flowers, which arises from the same Seeds.

The 3d Sort grows naturally in *North America*, but has been many Years an Inhabitant of the *Englisb* Gardens. This hath a perennial Root and an annual Stalk, which dies in Winter, but the Roots put out fresh Stalks in Spring. They will grow near five Feet high, and toward their Tops put out Side Branches, which are placed opposite, as are the Leaves, which are shaped like a Heart. At the Ends of the Shoots, the Flowers are produced in large Tufts, which are of a pure white; these appearing in October at a Season when there is a Scarcity of other Flowers, renders it more valuable.

This Sort is propagated by Seeds, as also by parting the Roots; the latter Method is commonly practised in *England*, because there are few Autumns so favourable as to ripen the Seeds: But the Seeds are frequently brought from *North America*, where this Plant is very common; for being light, they are easily waisted about to a great Distance, where they come to Maturity; so that where there are any Plants growing, all the adjoining Land is filled with the Seeds of them.

The best Time for parting and transplanting the Roots of this Plant, is in Autumn, soon after their Stalks decay, that they may have good Root before the drying Winds in Spring come on, otherwise they will not flower strong, or make a good Increase. The Roots should be allowed three Feet Room every Way, for as they spread and increase very much at Root, so when they are cramped for Room, the Plants starve, and in dry Seasons their Leaves will hang as if they were dead. They delight in a rich moist Soil and open Situation, where they will produce many Stalks from each Root, which will grow so large as to form a considerable Bush. This Plant will bear the severest Cold in this Country.

AGERATUM, or MAUDLIN. See *Achillea*.

AGERATUM PURPUREUM. See *Erinus*.

AGNUS CASTUS. See *Vitex*.

AGRIFOLIUM. See *Ilex*.

AGRIMONIA. *Lin. Gen. Plant.* 534. Agrimony.

The Characters are,

The Empalement of the Flower is of one Leaf, which is cut into five acute Segments, and rests on the Germen; the Flower has five Petals, which are plain and indented at their Extremity, and are narrow at their Base, where they are inserted in the Empalement. In the Center arises a double Style resting on the Germen, which is attended by twelve slender Stamina which are crowned with double compressed Summits. After the Flower is past, the Germen becomes two roundish Seeds fastened to the Empalement.

The Species are,

1. *AGRIMONIA foliis pinnatis hirsutis, foliolis oblongo ovatis dentatis.* The common Agrimony.

2. *AGRIMONIA foliis pinnatis, foliolis obtusis dentatis.* The white Agrimony.

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3. *AGRIMONIA altissima, foliis pinnatis foliolis oblongis acutis serratis.* The sweet scented Agrimony.

4. *AGRIMONIA foliis pinnatis, foliolis angustis acutis serratis, radice crassissima.* Eastern Agrimony with narrow pinnated Leaves sharply serrated, and a thick Root.

5. *AGRIMONIA foliis caulinis ternatis fructibus glabris.* H. C. Three leaved Agrimony with smooth Fruit.

The 1st Sort grows naturally in several Parts of England, by the Sides of Hedges, and in Woods. This is the Sort which is commonly used in Medicine, and is brought to the Markets by those who gather Herbs in the Fields. Dr. Linnaeus has joined the 3d and 4th Sorts to this, supposing them to be one Species; but from thirty Years Experience, I could never observe either of them to alter when raised from Seeds, but have constantly found the Seeds to produce the same Kind as the Parent Plants, they may therefore safely be accounted different Species.

The 2d Sort is the smallest of all the Species; the Leaves of this have not so many Pinnæ as the common Sort, and the Pinnæ are rounder, and the Indentures on their Edges blunter. The Spike of Flowers is slender, and the Flowers smaller and of a dirty white Colour. This Sort grows naturally in Italy from whence I received the Seeds, and have never found them vary.

The 3d Sort grows near four Feet high, the Leaves of this have more Pinnæ than either of the other, and they are longer and narrower, ending in acute Points; the Serratures of the Leaves are sharper than any of the other, and when handled emit an agreeable Odour.

There is another Sort mentioned by many Writers on Botany, titled *Agrimonia Santonensis odorata*, the Seeds of which I have received from several Professors of Botany abroad; but the Plants which were produced from them always proved the same as the 3d Sort, so that I doubt of its being a different Species; if there be however any Difference between them, the Seeds which were sent me were not right. The Leaves of this Sort make an agreeable cooling Tea, which is a very good Beverage for Persons in a Fever, in which Disorder I have known it often prescribed by a good Physician.

The 4th Sort is of humble Growth, seldom rising above two Feet high; the Pinnæ of its Leaves are longer and narrower than either of the former, and the Spikes of Flowers very short and thick. The Roots of this are very thick, and spread widely under Ground, by which it multiplies faster than either of the other; the Seeds are also much larger and rougher, than those of the common Sort. This was found growing in the Levant by Dr. Tournefort, who sent the Seeds to the Royal Garden at Paris, where they succeeded, and from thence the other Botanic Gardens have been supplied with them.

The 5th Sort greatly resembles the other in the Shape of its Pinnæ (or smaller Leaves) but there are only three on each Foot Stalk; the Flower of this hath a double Empalement, the outer one being fringed; there are but seven or eight Stamina in each Flower, and the Seeds are smooth, for which Reason Fabius Columna and other Writers on Botany, have separated it from the Agrimony, making it a distinct Genus.

All these Sorts are hardy perennial Plants, which will thrive in almost any Soil or Situation, and require

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no other Care but to keep them clean from Weeds. They may be propagated by parting of their Roots, which should be done in Autumn, when their Leaves begin to decay, that the Plants may be well established before the Spring. They should not be planted nearer than two Feet, that their Roots may have Room to spread. They may also be propagated by Seeds, which should be sown in Autumn, for if they are kept out of the Ground till Spring, they seldom come up the same Season.

AGROSTEMMA. Wild Lychnis or Campion.

The Characters are,

The Empalement of the Flower is permanent, of one Leaf, which is tubulous, thick, and cut into five narrow Segments at the Edge; the Flower is composed of five Petals, which are narrow at the Base where they are inserted in the Empalement, but spread open at the Top. In the Center is situated an oval Germen supporting five Styles, which are slender, erect, and crowned with simple Stigma; these are attended by ten Stamina, five of which are inserted in the Base of the Petals, and the others stand alternately between; after the Flower is past, the Germen becomes an oval oblong Capsule having one Cell opening into five Divisions, which is filled with angular Seeds.

The Species are,

1. *AGROSTEMMA hirsuta calycibus corollam æquantibus petalis integris nudis.* L. S. P. Hairy wild Lychnis, whose Empalement is equal with the Corolla, and the Petals entire and naked, commonly called Corn Campion.

2. *AGROSTEMMA glabra foliis lineari-lanceolatis petalis emarginatis coronatis.* Hort. Upsal. 115. Smooth wild Campion with narrow Spear-shaped Leaves, and the Petals of the Flowers indented at their Brim.

3. *AGROSTEMMA tomentosa foliis ovato-lanceolatis, petalis integris coronatis.* H. U. Single Rose Campion.

4. *AGROSTEMMA tomentosa foliis ovato-lanceolatis flore pleno.* The double Rose Campion.

5. *AGROSTEMMA tomentosa petalis emarginatis.* Lin. Sp. Plant. 436. The umbelliferous Mountain Campion.

The 1st Sort grows naturally in the Corn Fields in most Parts of England, so is seldom admitted into Gardens. The second Sort grows naturally in Sicily, and being a Plant of little Beauty, is only preserved in Botanic Gardens, for the sake of Variety.

The single Rose Campion has been long an Inhabitant of the English Gardens, where, by its Seeds having scattered, it is become a kind of Weed. There are three Varieties of this Plant, one with deep red, another with flesh-coloured, and a third with white Flowers, but these are of small Esteem; for the double Rose Campion being a finer Flower, has turned the others out of most fine Gardens. The single Sorts propagate fast enough by the Seeds, where they are permitted to scatter, for the Plants come up better from self-sown Seeds, than when they are sown by Hand, especially if they are not sown in Autumn.

The Sort with double Flowers never produces any Seeds, so is only propagated by parting of the Roots; the best Time for this is in Autumn, after their Flowers are past, in doing of this, every Head which can be slipped off with Roots should be parted; these should be planted in a Border of fresh undunged Earth, at the Distance of six Inches, observing to water them gently until they have taken Root, after which they will require no more,

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for much Wet is very injurious to them, as is also Dung. In this Border they may remain till Spring, when they are to be planted into the Borders of the Flower Garden, where their Flowers are very ornamental in July and August. This was accidentally obtained from Seeds of the single Sort.

The 5th Sort grows naturally upon the Helvetian Mountains, this is a low Plant, with woolly Leaves, the Flower Stem rises near a Foot high; the Flowers grow in Umbels on the Top of the Stalk, which are of a bright red Colour. This flowers in June, and the Seeds ripen in September; it must have a shady Situation, and will thrive best in a moist Soil.

AIZOON.

This name has been by some Writers applied to the House Leek, and also the Aloes; but Dr. Linnaeus has given it to a Plant near of Kin to the *Ficoidea*, which has been called *Ficoidea*, by some modern Botanists.

The Characters are,

It hath a permanent Empalement of one Leaf, which is cut into five acute Segments at the Top: There are no Petals in the Flower, but the five cornered Germen rests on the Empalement, supporting five Styles, which are crowned with simple Stigma; these are attended by many hairy Stamina, which are inserted into the Empalement, and are crowned with simple Summits. The Germen afterward becomes a swelling five cornered Capsule, having five Cells, in which are lodged many roundish Seeds.

The Species are,

1. AIZOON *foliis cuneiformi-ovatis floribus sessilibus*. Hort. Upsal. 127. Sempervive with oval Wedge-shaped Leaves, and Flowers without Foot Stalks.

2. AIZOON *foliis lanceolatis floribus sessilibus*. Lin. Sp. Plant. 488. Sempervive with Spear-shaped Leaves and Flowers, having no Foot Stalks.

3. AIZOON *foliis lanceolatis floribus paniculatis*. Lin. Sp. Pl. 448. Sempervive with Spear-shaped Leaves and Flowers growing in Panicles.

As we have no English Names for these Plants, so I have adopted this of *Sempervive*, which hath been applied to the *Aloe* and *Sedum*, both which have been also titled *Aizoon* and *Sempervivum*.

The 1st Sort is a Native of the Canary Islands: This is an annual Plant, which must be raised on a moderate hot Bed in the Spring; and when the Plants are fit to transplant, they should be carefully taken up, and planted each into a small Pot filled with fresh light Earth, and plunged into another moderate hot Bed, observing to shade them from the Sun until they have taken fresh Root; after which they must be hardened by Degrees to bear the open Air, into which they should be removed in June, placing them in a sheltered Situation, where they will flower, and ripen their Seeds in September, soon after which the Plants will perish.

The 2d Sort grows naturally in Spain; this is also an annual Plant, whose Branches trail on the Ground; the Flowers have no Beauty, so these Plants are only preserved by those who are curious in collecting rare Plants for the Sake of Variety.

The 3d Sort grows naturally at the Cape of Good Hope, from whence the Seeds were brought to Europe. This is also of humble Growth, and perishes soon after the Seeds are ripe.

These may be propagated in the same Manner as the first, and when the Plants have acquired Strength, they may be planted in the full Ground; they require a poor sandy Soil, for in rich Ground they grow very luxuriant in Branches, but do not flower till late in the Season, so rarely perfect their Seeds; when they are planted in dry Sand, or Lime Rubbish, they are more productive of Flowers, and less vigorous in their Branches.

ALATERNOIDES. See *Phyllica*, *Clusia*, *Ceanothus*.

ALATERNUS, Ever-green Privet.

The Characters are,

It hath male and female Flowers in different Plants in some Species, and in others both Sorts of Flowers on the same. The male Flowers are composed of an Empalement of one Leaf, which is Funnel-shaped, and cut into five Segments at the Brim; to the Sides of the Empalement are fixed five small Petals; at the Base of these Petals are fastened so many Stamina, which are crowned with round Summits. The female Flowers have a great Resemblance to the Male, but have no Stamina; in the Center is placed the Germen, supporting a trifid Style crowned by round Stigma, the Germen afterward becomes a soft round Berry, containing three Seeds.

The Species are,

1. ALATERNUS *foliis ovatis marginibus crenatis glabris*. The common *Alaternus*, with smooth Leaves indented on their Edges.

2. ALATERNUS *foliis subcordatis serratis glabris*. *Alaternus* with Heart-shaped smooth Leaves, which are sawed on their Edges.

3. ALATERNUS *foliis lanceolatis profunde serratis glabris*. *Alaternus* with smooth Spear-shaped Leaves, which are deeply sawed.

4. ALATERNUS *foliis ovato-lanceolatis integerrimis glabris*. *Alaternus* with smooth oval Spear-shaped Leaves which are entire.

The Varieties of these Plants are, the 1st Sort with variegated Leaves, which is commonly called *Blotched Phillyrea* by the Nursery Gardeners. And the 3d Sort with Leaves striped with White, and another with Yellow; these are known by the Silver and Gold striped *Alaternus*: But as these are accidental Varieties, so I have omitted placing them among the Number of Species.

The common Distinction of this Genus from the *Phillyrea*, is in the Position of their Leaves, which in the Plants of this are placed alternately on the Branches, whereas those of *Phillyrea* are placed by Pairs opposite; this is obvious at all Seasons, but there are more essential Differences in their Characters, as will be explained under the article *Phillyrea*.

The 1st Sort has been long cultivated in the English Gardens, but the plain Sort is now uncommon; for the blotched-leaved Sort has been generally cultivated in the Nurseries, and the other almost totally neglected.

These Plants were much more in Request formerly than they are at present, when they were planted against Walls in Court Yards to cover them, as also to form ever-green Hedges in Gardens, for which Purpose these were very improper; for their Branches shoot very vigorously, and being very pliant, they are frequently displaced by the Wind; and in Winter, when much Snow falls in still Weather, the Weight of that which lodges on the Hedges, frequently breaks them down: Add to this

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this the Trouble of keeping them in Order, which cannot be effected with less than three Times clipping in a Season; which is not only expensive, but also occasions a great Litter in a Garden: These Inconveniencies have justly brought these Hedges into Disesteem.

The 3d Sort with Silver-striped Leaves, was also in great Request some Years ago, for planting against Out-houses, and other Buildings, to hide the Brick-work; but as these required to be often clipped, and their Branches frequently wanting to be fastened up to the Wall, which was troublesome and expensive; and this Sort of Wall Hedges, being great Harbour for Vermin, so of late there has been but little Demand for these Plants. The Sort with Gold-striped Leaves is pretty rare in the *English* Gardens, and is not so hardy as that with Silver Stripes, so that in severe Winters they are often killed. But the Taste for these variegated Plants is almost lost in *England*, there being few Persons now, who do not prefer the plain green Leaves to those which are striped.

The 2d Sort which grows naturally about *Turin*, was formerly in the *English* Gardens, in much greater Plenty than at present. This was generally called *Celastrus*, or Staff Tree; the Leaves of this Sort are placed at greater Distances than those of the first; so that their Branches appear thinly covered with them, which may have occasioned their being disesteemed. The Leaves of this are shorter than those of the first Sort, and are rounded at their Foot Stalks like a Heart-shaped Leaf, the Edges are also sawed.

The 3d Sort has been an old Inhabitant in some Gardens, but was not much propagated till of late Years; the Leaves of this are longer and narrower than those of either of the other Sorts, and the Serratures on their Edges are much deeper; this shoots its Branches more erect, and forms an handsome Bush than any of the other, and is equally hardy, so may be allowed to have a Place in all Plantations of Ever-greens. This grows naturally in the South of *France*, where the Berries are gathered, and sold by the Name of *Avignon* Berries, for the Use of Painters, &c. for making a yellow Pigment.

These Sorts are by some supposed to be only Varieties and not distinct Species; but from many repeated Trials, in raising them from Seeds, I can affirm they do not vary, the Seeds constantly producing the same Species as they were taken from.

All these Sorts are easily propagated by laying their Branches down, as is practised for many other Trees. The best Time for this is in the Autumn, and if properly performed, the Layers will have made good Roots by the Autumn following, when they may be cut off from the old Stock, and planted either into the Nursery, or in the Places where they are designed to remain. When they are planted in a Nursery, they should not remain there longer than a Year or two; for as they shoot their Roots to a great Distance on every Side, so they cannot be removed after two Years Growth, without cutting off great Part of them, which is very hurtful to the Plants, and will greatly retard their Growth, if they survive their Removal; but they are frequently killed by transplanting, when they have stood long in a Place. They may be transplanted either in the Autumn or the Spring, but in dry Land the

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Autumn Planting is best, whereas in moist Ground the Spring is to be preferred.

The plain Sorts may be propagated by sowing their Berries, which they produce in great Plenty, but the Birds are greedy Devourers of them when they begin to ripen. The Plants raised from Seeds, always grow more erect than those propagated by Layers, so are fitter for large Plantations, as they may be trained up to Stems, and form ed more like Trees; whereas the Layers are apt to extend their lower Branches, which retards their upright Growth, and renders them more like Shrubs. They will grow to the Height of eighteen or twenty Feet, if their upright Shoots are encouraged; but to keep their Heads from being broken by Wind or Snow, those Branches which shoot irregular should be shortened, which will cause their Heads to be closer, and not in so much Danger.

All the Sorts thrive best in a dry gravelly or sandy Soil, for in rich Ground they are often injured by Frost, when the Winters are severe, but in rocky dry Land they are seldom injured: And if in very hard Frost their Leaves are killed, yet the Branches will remain unhurt, and will put out new Leaves in the spring.

ALCEA, *Lin. Gen.* 750. The Hollyhock.

The Characters are,

The Flower hath a double Empalement, of which one is permanent. The outer one is spread open, and cut at the Top into six Segments, the inner is larger and slightly cut into five. The Flower is composed of five Petals, which coalesce at their Base, and spread open at the Top in Form of a Rose. In the Center is placed the round Germen, supporting a short cylindrical Style, crowned with numerous Stigma, which is attended by many Stamina joined below to the pentagonal Column, and spread open at Top; these are crowned with Kidney-shaped Summits: After the Flower is past, the Germen becomes a round, depressed, articulated Capsule, having many Cells, in each of which is lodged one compressed Kidney-shaped Seed.

The Species are,

1. ALCEA *foliis sinuatis angulosis*. Hort. Cliff. 348. Hollyhock with angular sinuated Leaves.

2. ALCEA *foliis palmatis*. H. C. Hollyhock with hand-ed Leaves. This is the *Malva rosea folio ficus*. C. B. P.

These are distinct Species, whose Difference in the Form of their Leaves always continues. The Leaves of the 1st Sort are roundish, and cut at their Extremity into Angles; but those of the 2d are deeply cut into six or seven Segments, so as to resemble a Hand.

The various Colours of their Flowers being accidental, as also the double Flowers being only Varieties which have risen from Culture, are not by Botanists deemed distinct Species, so I have not enumerated them here, therefore shall only mention the various Colours, which are commonly observed in their Flowers; which are white, pale red, deep red, blackish red, purple, yellow, and flesh Colour. Besides these, I many Years ago saw some Plants with variegated Flowers, in the Garden of the late Lord Burlington, in London, raised from Seeds which came from *China*.

Although these Varieties of double Hollyhocks are not constant, yet where their Seeds are carefully saved from the most double Flowers, the greatest Number of the Plants will arise nearly the same, as the Plants from which

which they were taken, both as to their Colour and the Fulness of their Flowers; provided no Plants with single or bad coloured Flowers are permitted to grow near them. Therefore so soon as any such appear, they should be removed from the good ones, that their Farina may not spread into the other Flowers, which would cause them to degenerate.

The 1st Species grows naturally in *Cbina*, from whence I have often received the Seeds: The 2d Sort I have received from *Istria*, where it was gathered in the Fields; but these Seeds produced single red Flowers only, whereas from some Seeds of this Sort which were given me by the late *Charles Du Bois*, Esq; of *Mitcham*, in 1726, which he procured from *Madras*, I raised many double Flowers of several Colours.

These Plants, although Natives of warm Countries, yet are hardy enough to thrive in the open Air in *England*, and have for many Years been some of the greatest Ornaments in the Gardens, toward the latter Part of Summer: But since they have become very common, have not been so much regarded as they deserve; partly from their growing too large for small Gardens, and their requiring tall Stakes to secure them from being broken by strong Winds. But in large Gardens, where they are properly disposed, they make a fine Appearance; for as their Spikes of Flowers grow very tall, so there will be a Succession of them on the same Stems, more than two Months; the Flowers on the lower Part of the Spike, appearing in *July*, and as their Stalks advance, so new Flowers are produced till near the End of *September*. When the Plants are planted in good Ground, their Stalks often rise to the Height of eight or nine Feet, so that near six Feet of each will be garnished with Flowers; which when double, and good Colours, make a fine Appearance, if the various Colours are properly intermixed.

They are propagated by Seeds, which, as hath been already observed, should be carefully saved from those Plants whose Flowers are the most double, and of the best Colours. If these are preserved in their Capsules until Spring, the Seeds will be better, provided they are gathered very dry, and Care be taken that no Damp comes to them in Winter, which will cause their Covers to be mouldy, and thereby spoil the Seeds.

The Seeds should be sown on a Bed of light Earth, about the Middle of *April*, which must be covered about half an Inch deep, with the same light Earth; some Persons sow them in shallow Drills, and others scatter the Seeds thinly over the whole Bed. When they are sown in the former Method, the Plants generally come up thick, so will require to be transplanted sooner than those which are sown in the latter. By the 1st, the Seeds may be more equally covered, and kept clean with less Trouble, because the Ground between the Drills may be hoed. When the Plants have put out six or eight Leaves, they should be transplanted into Nursery Beds, at a Foot Distance from each other, observing to water them until they have taken good Root; after which they will require no farther Care, but to keep them clean from Weeds till *October*, when they should be transplanted where they are to remain.

Some Persons let their Plants remain a Year longer in the Nursery Beds to see their Flowers, before they re-

move them to the Flower Garden; but when this is intended, the Plants should be planted at a greater Distance in the Nursery Beds, otherwise they will not have Room to grow. However, I have always chosen to remove my Plants the first Autumn, for young Plants more surely grow, than those which are older, and if the Seeds are carefully saved, there will not be one in ten of the Plants come single or of bad Colours.

ALCHEMILLA. Ladies Mantle.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is spread open at the Brim, and cut into eight Segments. There are no Petals to the Flower, but the Center of the Empalement is occupied by the oval Germen, into which is inserted a long Style, crowned with a globular Stigma: This is attended by four erect Stamina resting on the Brim of the Empalement, and crowned with roundish Summits; the Germen afterwards turns to a single compressed Seed.

The Species are,

1. *ALCHEMILLA foliis lobatis serratis, segmentis involucri acuto.* The common Ladies Mantle.

2. *ALCHEMILLA foliis lobatis sericeis acutis serratis, segmentis involucri subrotundis.* Smaller silvery Ladies Mantle with lobated Leaves sharply serrated, and the Segments of the Involucrum cut into roundish Segments.

3. *ALCHEMILLA foliis digitatis serratis.* *Flor. Lapp. 61.* Silvery Alpine Ladies Mantle with handed Leaves.

4. *ALCHEMILLA foliis quinatis multifidis glabris.* *Lin. Sp. Pl. 123.* Smooth five leaved Ladies Mantle, cut into many Segments.

The 1st Sort grows naturally in moist Meadows in several Parts of *England*, but is not very common near *London*: The Roots are composed of many thick Fibres, which spread greatly when they are in a proper Soil; the Leaves rise immediately from the Root, sustained by long Foot Stalks; these are roundish, and scalloped round the Borders, having seven or eight Lobes, and is shaped somewhat like the Ladies scalloped Mantles, from whence it had its Name. The Flower Stems arise between the Leaves about a Foot high, which divide into many Branches, and are at each Joint garnished with one small Leaf, shaped like those below; the Flowers are composed of an herbaceous Empalement, in the Center of which is the Style attended by four Stamina, crowned with yellow Summits; so that the only Beauty of this Plant is in the Leaves, which are used in Medicine, and are esteemed to be vulnerary, drying and binding, and of great Force to stop inward Bleeding.

The 2d Sort is much smaller than the 1st, and the Leaves are much whiter and appear silky; the Flower Stems do not branch out so much, nor are the Flowers produced in so large Clusters: Their Empalement is broader, and the Segments more obtuse.

The 3d Sort grows naturally on the Mountains in *Yorkshire*, *Westmoreland*, and *Cumberland*, generally upon moist boggy Places. It is also a Native of *Sweden* and *Denmark*, the *Alps*, and other cold Parts of *Europe*, and is admitted into Gardens for the Sake of Variety. The Leaves of this Sort are very white, and deeply cut into five Parts like a Hand; the Flower Stems seldom rise more than six Inches high, nor do the Flowers make a better Appearance than the other Sorts.

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The 4th Sort grows naturally in Sweden, Lapland, and other cold Countries, so is only to be found in some few curious Botanic Gardens in this Country. These are all abiding Plants, which have perennial Roots and annual Stalks which perish in Autumn. They may be propagated by parting their Roots; the best Time for which is in Autumn, that their Roots may be established before the drying Winds of the Spring come on. They should have a moist Soil and a shady Situation, otherwise they will not thrive in the Southern Parts of England. When they are propagated by Seeds, they should be sown in Autumn; for when they are sown in Spring they seldom grow the first Year. They should be sown on a shady moist Border, and when the Plants come up, they require no other Care but to be cleaned from Weeds.

ALDER-TREE. See *Alnus*.

ALESANDER, or ALEXANDER. See *Smyrnum*.

ALKEKENG. See *Phytalis*.

ALLELUJAH. See *Oxalis*.

ALLIARIA, Sauce alone, or Jack by the Hedge.

See *Hesperis*.

ALLIUM, Garlick.

The Characters are,

The Flowers are included in one common Spatba, which becomes dry; the Flower is composed of six oblong erect concave Petals, and six Awl-shaped Stamina, which extend the Length of the Petals, and are crowned with oblong Summits; in the Center is situated a short three cornered Germen supporting a single Style which is crowned by an acute Stigma. The Germen afterwards becomes an obtuse three cornered Capsule, opening into three Parts, having three Cells, filled with roundish Seeds.

The Species are,

1. *ALLIUM caule planifolio bulbifero, radice compositâ, flaminibus tricuspidatis*. Common manured Garlick.

2. *ALLIUM caule planifolio bulbifero, foliis crenulatis vaginis ancipitibus flaminibus tricuspidatis*. Rocambole.

3. *ALLIUM scapo nudo semicylindrico foliis lanceolatis petiolatis umbellâ fastigiata*. *Lin. Sp. Plant.* 300. Broad leaved wild Garlick or Ramfoms.

4. *ALLIUM caule planifolio umbellifero umbellâ globosâ flaminibus tricuspidatis radice laterali*. *Lin. Sp. Plant.* 294. Great round-headed Garlick of the Holm Islands.

5. *ALLIUM scapo nudo subcylindrico foliis lanceolatis sessilibus umbellâ fastigiata*. *H. U.* Yellow Moly.

6. *ALLIUM caule planifolio umbellifero ramulo bulbifero flaminibus simplicibus*. *Lin. Sp. Plant.* 296. Great broad leaved Moly with Lilly Flowers.

7. *ALLIUM caule planifolio umbellifero flaminibus filiformibus flore triplo longioribus foliis obliquis*. *Lin. Sp. Plant.* 296. Umbelliferous Garlick with plain Leaves, slender Stamina, which are three times the Length of the Flower, and oblique Leaves.

8. *ALLIUM caule subplanifolio umbellifero flaminibus subulatis longioribus umbellâ globosâ foliis linearibus subconvexis*. *Lin. Sp. Pl.* 296. Umbelliferous Garlick with half plain-Leaves, long Awl-shaped Stamina, globular Umbels, and narrow convex Leaves.

9. *ALLIUM caule planifolio umbellifero umbellâ fastigiata flaminibus corollam æquantibus foliis lævibus*. *L. S. P.* Umbelliferous Garlick with plain Leaves, close Umbels, Stamina equal with the Flower, and smooth Leaves.

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10. *ALLIUM caule planifolio bulbifero vaginis teretibus spatbâ muticâ flaminibus tricuspidatis*. *H. Scan.* 227. Bulb-bearing Garlick, with plain Leaves, a taper Vagina, and three pointed Stamina.

11. *ALLIUM caule planifolio bulbifero flaminibus subulatis*. *Lin. Sp. Plant.* 297. Bulb-bearing Garlick with plain Leaves, and Awl-shaped Stamina.

12. *ALLIUM caule teretifolio umbellifero foliis semiteretibus flaminibus tricuspidatis corollâ longioribus*. *Lin. Sp. Plant.* 297. Umbelliferous Garlick, with taper Leaves and trifid Stamina, which are longer than the Petals.

13. *ALLIUM caule teretifolio umbellifero umbellâ globosâ flaminibus subulatis*. Umbelliferous Garlick with taper Leaves, a globular Umbel, and Awl-shaped Stamina.

14. *ALLIUM scapo nudo ancipiti foliis linearibus subulatis convexis lævibus umbellâ subrotundâ flaminibus subulatis*. Greater Mountain Garlick with Leaves like Narcissus.

15. *ALLIUM scapo nudo ancipiti foliis linearibus canaliculatis subulatis umbellâ fastigiata*. *H. U.* Garlick with a naked Stalk, narrow, hollow Leaves, which are angular on their lower Side, and a compact Umbel.

16. *ALLIUM caule planifolio umbellifero foliis inferioribus hirsutis flaminibus subulatis*. *L. Sp. P.* Umbelliferous Garlick with hairy under Leaves, and Awl-shaped Stamina, commonly called *Dioscoridis Moly*.

17. *ALLIUM caule planifolio umbellifero umbellâ globosâ flaminibus lanceolatis corollâ longioribus*. *Lin. Mat. Med.* 163. Umbelliferous Garlick with a plain Leaf, a globular Umbel, and Spear-shaped Stamina, which are longer than the Petals of the Flower.

18. *ALLIUM bulbiferum foliis linearibus canaliculatis, umbellâ minore*. Bulb-bearing Garlick, with narrow fistular Leaves and a small Umbel.

19. *ALLIUM scapo nudo triquetro*. *Lin. Sp. Plant.* 300. Garlick with a naked triangular Stalk.

The two 1st Species are easily propagated by planting the Cloves, or small Bulbs, in the Spring, in Beds about four or five Inches Distance from each other, keeping them clean from Weeds. About the beginning of June, the Leaves of the first Sort should be tied in Knots, to prevent their spindling, or running to Seed, which will greatly enlarge the Bulb. In the Middle of July, the Leaves will begin to wither and decay, at which time they should be taken out of the Ground, and hanged up in a dry Room, to prevent their rotting, and may be thus preserved for Winter Use.

The Roots of the 2d may remain in the Ground till the Leaves are decayed, when their Bulbs may be taken up, and dried, to be preserved for Use during the Winter Season; but some of the Roots may be at the same time planted again for the succeeding Year. This Sort requires to be planted in Autumn, especially on dry Ground, otherwise their Bulbs will not be large.

The 3d Sort was formerly in greater Esteem than at present, it being rarely cultivated in Gardens, but is found wild in moist shady Places in many parts of England: and may be cultivated by planting the Roots in a moist shady Border at almost any time of the Year; but the best Season is in July, just as the green Leaves are decaying.

The 4th Sort grows naturally in the Holm Islands, from whence it has been transplanted into several Gardens.

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deins, where it is preserved more for Variety than Use.

The 11th and 13th Sorts grow wild in the Northern Parts of England; but are by the Curious in Botany preserved in Gardens. These are very hardy, and may be removed in July or August, when their Leaves decay, and will thrive in almost any Soil or Situation.

The 5th Sort was formerly preserved in Gardens, for the Sake of its yellow Flowers, but having a very strong Garlick Scent, most People have rooted it out.

The 6th Sort is also preserved by many for the Sake of Variety, but having a very strong Scent, is not often admitted to the Flower Garden.

The 9th and 12th Sorts are sometimes permitted to have a Place in Gardens for the Sake of Variety.

The 7th, 8th, and 10th Sorts grow naturally in Tartary and Siberia, from whence their Seeds were sent to Petersburg, and from thence some of the Botanic Gardens have been supplied with Seeds.

The 14th, 15th, and 16th Sorts have been planted in Gardens for the Variety of their Flowers, but of late Years most People have turned them out, to make Room for better Sorts. But the 16th multiplies so fast by Offsets, as to render it difficult to extirpate them, when they have remained any time in a Garden.

This produces large Umbels of white Flowers, growing on Stalks about six Inches high, the Time of flowering is in April and May.

The 18th Sort was brought from Virginia, and is preserved in Botanic Gardens for Variety's Sake, but has no great Beauty; it is very hardy, and will thrive in the open Air very well; and is propagated by its Bulbs, which are produced in Plenty on the Top of the Stalks.

They are all of them very hardy, and will thrive in almost any Soil or Situation, and are easily propagated either by their Roots, or from Seeds; if from the Roots, the best time is in Autumn, that they may take good Root in the Ground before the Spring, which is necessary, in order to have them flower strong the following Summer. If by Seeds, they may be sown on a Border of common Earth, either in Autumn, soon after the Seeds are ripe, or in the Spring following, and will require no farther Care, but to keep them clear from Weeds; in the following Autumn the Plants may be transplanted into the Borders where they are to remain for good.

The greatest Part of these Plants produce their Flowers in May, June, and July.

The Yellow Moly will grow about a Foot high; and having some Beauty in the Flowers, is worthy of a Place in such Borders of the Flower Garden, where few better Things will thrive. These increase plentifully both by Roots and Seeds.

The 6th and 17th Sorts grow upwards of two Feet high; and when they are in Flower make a pretty Appearance: and as they are not troublesome to keep, may be allowed a Place in the Borders of the Flower Garden.

All the other Sorts are equally hardy, and will grow in any Soil or Situation; but as they have little Beauty, they are rarely preserved, except in Botanic Gardens for the Sake of Variety.

ALMOND TREE. See Amygdalus.

ALMOND DWARF. See Persica.

ALNUS. The Alder Tree.

The Characters are,

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It hath male and female Flowers, which are produced at remote Distances on the same Plant; the male Flowers are digested into a long Jule, or Katkin, which is loose, imbricated and cylindrical. The Flowers come out from the Scales by threes; these have each four small Stamina. The female Flowers are collected into a conical scaly Head; these have no Petals, but each an oval Germen, supporting two Styles, which are extended the Length of the Scales and are crowned with a single Stigma, after the Flowers are past the Germen becomes a single oval Seed, inclosed in the Scale of the Fruit.

The Species are,

1. ALNUS foliis obversè ovatis rugosis. Alder with obverse oval rough Leaves. Round leaved Alder.

2. ALNUS foliis ovato lanceolatis marginibus dentatis. Alder with oval Spear-shaped Leaves, indented on their Edges. Long leaved Alder.

3 ALNUS pumila folio rotundo serrato. Dwarf Alder with a round sawed Leaf.

The 1st Sort here mentioned, is the common Alder, which is propagated in England. The 2d Sort is very common in Austria and Hungary, from whence I have been furnished with the Seeds. The Leaves of this Sort are longer, narrower, and not so glutinous as those of the 1st, nor are they so rough; they are also of a thinner Consistence. The 3d Sort grows naturally on the Alps and Apennines. This is a very humble Shrub seldom rising more than a Foot high, the Branches always trailing on the Ground. This generally grows in moist Places and upon Bogs, so is with great Difficulty preserved in Gardens. I have kept this Sort for three, or four Years, by planting it in Pots, filled with a Peat Earth, taken from a Bog, and keeping the Earth constantly moist; but when planted in the full Ground they did not survive one Summer. This Sort is only preserved for Variety in Botanic Gardens, being of no Use or Beauty.

The two 1st Sorts delight in a very moist Soil, where few other Trees will thrive, and are a great improvement to such Lands; they are propagated either by Layers or planting of Truncheons about three Feet in Length. The best Time for this is in February, or the Beginning of March; these should be sharpened at one End, and the Ground loosened with an Instrument before they are thrust into it, lest by the Hardness of the Soil the Bark should be torn off, which may occasion their Miscarriage. They should be thrust into the Earth at least two Feet, to prevent their being blown out of the Ground by strong Winds, after they have made strong Shoots. These Plantations should be cleared from all such Weeds as grow tall, otherwise they will over bear the young Shoots; but when they have made good Heads, they will keep down the Weeds, and will require no farther Care.

If you raise them by laying down the Branches, it must be performed in October; and by the October following, they will have taken Root sufficient to be transplanted out; which must be done by digging a Hole, and loosening the Earth in the Place where each Plant is to stand, planting the young Tree at least a Foot and a Half deep, cutting off the Top to about nine Inches above the Surface, which will occasion them to shoot out many Branches.

The Distance these Trees should be placed (if designed for

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for a Coppice) is six Feet square; and if the small lateral Shoots are taken off in the Spring, it will very much strengthen your upright Poles, provided you leave a few small Shoots at Distances upon the Body thereof, to detain the Sap for the Increase of its Bulk.

These Trees may be also planted on the sides of Brooks (as is usual for Willows), where they will thrive exceedingly, and may be cut for Poles every fifth or sixth Year. This Wood is used by Turners, and will endure a long time under Ground, or laid in Water.

The Alder Tree is also very proper to Plant for Hedges, in moist Ground, where they thrive very fast, and may be trained into very thick close Hedges to the Height of twenty Feet and upwards. The Leaves of this Tree being large, and of a deep Green, have a very good effect in Hedges; and where they are planted for Coppice Wood in moist Land, make a much better Figure than most other aquatic Trees; so that where the Beauty of such Plantations is considered, these should be preferred to other Sorts usually planted in swampy Grounds.

ALNUS NIGRA BACCIFERA. See Frangula.

ALOE [Gr. Ἀλόη.]

The Characters are,

The Flower is naked, having no Empalement, it is of one Leaf, having a long smooth Tube, which is divided at the Top into six Parts, which spread open; it hath six Awl-shaped Stamina, which are inserted at their Base to the Germen, and are extended the Length of the Tube; these are crowned with oblong Summits; in the Center is situated the oval Germen, supporting a single Style, which is of the same Length with the Stamina, and is crowned with a trifid Stigma. The Germen afterwards becomes an oblong Capsule, having three Furrows, which is divided into three Cells opening in three Parts, and filled with angular Seeds.

The Species are,

1. ALOE floribus pedunculatis cernuis corymbosis sub-cylindricis. L. S. P. Aloe with dependent Flowers, having Foot Stalks which are ranged in a cylindrical Corymbus. The Mitre-shaped Aloe.

2. ALOE foliis dentatis erectis succulentibus planis maculatis floribus luteis in Thyrsa dependentibus. Aloe with erect succulent Leaves, which are plain, indented, and spotted, and yellow Flowers, growing in a loose Spike, hanging downward. The common Barbadoes Aloe.

3. ALOE foliis amplexicaulibus reflexis, margine dentatis, floribus cylindricis caule fruticoso. Aloe with Leaves embracing the Stalks, which are reflexed and indented on their Edges, Flowers growing cylindrical, and a shrubby Stalk. The Sword Aloe.

4. ALOE foliis latioribus amplexicaulibus, margine & dorso spinosis, floribus spicatis, caule fruticoso. Aloe with broader Leaves embracing the Stalks, whose Edges and Back are set with Spines, Flowers growing in Spikes, and a shrubby Stalk. African Aloe.

5. ALOE foliis latissimis amplexicaulibus, maculatis, margine spinosis floribus umbellatis. Aloe with very broad spotted Leaves embracing the Stalk, whose Edges are set with Spines, and Flowers, growing in an Umbel. By some called the Sope Aloe, and by others Carolina Aloe.

6. ALOE foliis latioribus amplexicaulibus maculatis margine spinosis floribus spicatis. Aloe with broad spotted Leaves embracing the Stalks, whose Edges have Spines, and Flowers growing in a Spike.

7. ALOE foliis ensiformibus inermis ancipitibus floribus laxè spicatis caule fruticoso. Aloe with Sword-shaped smooth Leaves, standing two Ways, the Flowers growing in loose Spikes, and a shrubby Stalk.

8. ALOE foliis amplexicaulibus utraq; spinosis, floribus spicatis. Aloe with Leaves embracing the Stalks, which are prickly on every Side, and Flowers growing in Spikes.

9. ALOE floribus pendunculatis cernuis racemosis prismaticis ore patulo aequali. Lin. Sp. Plant. 321. Aloe with hanging Branching Flowers, having Foot Stalks, and spreading equally at the Brim. Partridge-breast Aloe.

10. ALOE foliis erectis subulatis radicatis undique inermes spinosis. Hort. Cliff. 131. Aloe with erect Awl-shaped Leaves, set with soft Spines on every Part.

11. ALOE floribus sessilibus infundibuli formibus bilabiatibus laciniis quinque revolutis summa erecta. Lin. Sp. Plant. 322. Aloe with Funnel-shaped Flowers, without Foot Stalks, opening in two Lips, and cut into five Segments, which turn backward, and are erect at the Top.

12. ALOE floribus sessilibus ovatis crenatis segmentis interioribus convergentibus. Lin. Sp. Plant. 322. Aloe with oval crenated Flowers, without Foot Stalks, and the interior Segments scarce appearing.

13. ALOE sessilis foliis lingui formibus maculatis floribus pedunculatis cernuis. Aloe with dwarf Tongue-shaped spotted Leaves, and hanging Flowers, which have Foot Stalks. Tongue Aloe.

14. ALOE floribus sessilibus bilabiatis labio superiore erecto inferiore patente. Lin. Sp. Plant. 322. Aloe with sessile Flowers, gaping with two Lips, the upper being erect, and the under spreading. Pearl Aloe.

15. ALOE foliis longissimis & angustissimis marginibus spinosis, floribus spicatis. Aloe with very long narrow Leaves, having Spines on their Edges, and Flowers growing in Spikes. The Succotrine Aloe.

16. ALOE caule brevi, foliis amplexicaulibus bifariam versis spinis marginibus erectis floribus capitatis. Aloe with a short Stalk, Leaves standing two Ways, which embrace the Stalk; the Spines on the Edges erect, and Flowers growing in a Head.

17. ALOE sessilis foliis brevioribus planis carnosissimis apice triquetris marginibus inermes spinosis. Low Aloe with short plain fleshy Leaves, triangular at their Ends, and Borders set with soft Spines. Cobweb Aloe.

18. ALOE foliis ovato-lanceolatis carnosissimis apice triquetris angulis inermes dentatis. H. C. Aloe with oval Spear-shaped fleshy Leaves, having three Angles at their Extremities, which are indented and set with soft Spines.

19. ALOE floribus sessilibus triquetris bilabiatis labio inferiore revolutis. L. S. Pl. Aloe with Flowers divided into three Parts, the under Lip being turned back. Cushion Aloe.

20. ALOE sessilis foliis carinatis utraq; verrucosis bifariam versis. Low Aloe with Keel-shaped Leaves, warted on every Part, and standing two Ways. Pearl tongue Aloe.

21. ALOE sessilis foliis carinatis verrucosis apice triquetris carnosissimis. Low Aloe with fleshy, Keel-shaped, spotted Leaves, which are triangular at their Extremities.

22. ALOE foliis latis undulatis maculosis floribus spicatis infundibuli formibus limbo revolutis. Aloe with broad spotted waved Leaves, and Funnel-shaped Flowers growing in Spikes, which are turned back at their Brim. Guiney Aloe.

23. ALOE

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23. *ALOE pumila, foliis longis angustis integerrimis maculatis radice repente.* Low Aloe with long narrow entire Leaves, which are spotted, and a creeping Root. Zeylon Aloe.

24. *ALOE foliis amplexicaulibus nigricantibus undique spinosis.* Aloe with dark green Leaves embracing the Stalks, which are beset with Spines on every Side. This is commonly, but falsely called *Aloe ferox*.

25. *ALOE floribus sessilibus reflexis imbricatis prismaticis.* L. S. Pl. Aloe with reflexed Flowers growing close to the Stalks, in form of a Prism, lying over each other like Tiles on a House; commonly called *Iris Uvaria*.

The 1st Sort of Aloe grows with an upright Stalk, to the Height of five or six Feet, the Leaves closely embrace the Stalks; these are thick, succulent, broad at their Base, growing narrower, and ending in a Point, they are of a dark green Colour, and have Spines on the Edges, as also a few on their upper Surface, the Leaves stand erect, and draw together towards the Top, where they form the Resemblance of a Mitre, from whence it is called the Mitre Aloe. The Flower Stem rises about three Feet high, on the Top of which the Flowers come out in a sort of globular Bunch at first, but afterwards are formed into a cylindrical Spike, these have long Foot Stalks, which come out horizontally, and the Flowers hang downward, they are tubulous, and are cut into six unequal Segments to the Bottom, three being alternately broader than the others, and spread open at the Brim.

There are six Stamina, three of which are as long as the Tube of the Flower, the other three are shorter. These are crowned with flat oblong Summits of a gold Colour. The three-corned Germen is situated in the Bottom of the Flower, supporting a single Style, which is shorter than the Stamina, having no Stigma on the Top. The Tube of the Flower is of a fine red Colour, and the Brim of a pale Green, so that it makes a pretty Appearance when the Spikes of Flowers are large.

This Sort will live in a warm dry Green-house in Winter, and may be placed in the open Air in Summer, in a sheltered Situation; but the Plants should not have much Wet, lest it should rot their Stems. With this Management the Plants will not grow so fast, as when they are placed in a Stove, but they will be stronger, and their Stems will support their Heads much better.

The 2d Sort is very common in the Islands of America, where the Plants are propagated upon the poorest Land, to obtain the *Hepatic Aloes*, which is brought to England, and is used chiefly for Horses.

The Leaves of this Sort are about four Inches broad at their Base, where they are near two Inches thick, and diminish gradually to a Point. These are about two Feet long, in old Plants, and have a few Indentures on their Edges; at the End of each is placed a soft Spine, the Leaves are of a Sea-green Colour, and when young are spotted with white. The Flower Stem rises near three Feet high, and the Flowers stand in a slender loose Spike, with very short Foot Stalks, and hang downwards. They are tubulous, and cut into six Parts, are of a bright yellow Colour, and the Stamina stand out beyond the Tube. This never produces Seed in England, and is too tender to live through the Winter in our Climate, in a common Green-house, therefore it should be placed in a moderate Degree of Warmth in that Sea-

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son. I have known Plants of this Kind, which have had an oiled Cloth tied about their Roots, and hung up in a warm Room more than two Years, and afterwards planted in Pots, which have grown very well, from whence the Plant has been called *Sempervivum*.

The 3d Sort will grow to the Height of ten or twelve Feet, with a strong naked Stem great Part of the Length, the Leaves growing at the Top, which closely embrace the Stalk; these are about two Inches broad at their Base, growing narrower to a Point, and are reflexed downwards. These are indented on their Edges, each being armed with a strong crooked Spine. The Leaves are of a Sea-green Colour, and very succulent. The Flowers grow in a pyramidal Spike, are tubulous, and of a bright red Colour. These are in Beauty in November and December.

This Sort will live through the Winter in a good Green-house, but they will not flower unless they have a moderate Share of Warmth, therefore the Pots should be removed into a Stove in October, which should not be kept above temperate Heat, in which Situation they seldom fail to flower.

The 4th Sort is somewhat like the 3d, but the Leaves are broader, and have several Spines on their Backs towards their Extremities. The Flowers of this grow in a looser Spike, and the Plants never put out any Suckers, so that it is very difficult to increase.

The 5th Sort seldom rises much above two Feet high, the Leaves are very broad at their Base, where they closely embrace the Stalk, and gradually decrease to a Point. The Edges are set with sharp Spines, and the under Leaves spread open horizontally every Way; these are of a dark green Colour spotted with white, somewhat resembling the Colour of soft Sope, from whence some have given it the Title of Sope Aloe. The Flowers grow in Umbels on the Top of the Stalks, which are of a beautiful red Colour, and appear in August and September. This Sort is hardy, so may be kept in a common Green-house in Winter, and in the Summer placed in the open Air.

The 6th Sort is somewhat like the 5th in its Manner of Growth, but the Leaves are broader, of a lighter green Colour, the Edges and also the Spines are of a Copper Colour, and the Flowers grow in loose Spikes. This is as hardy as the former, so may be treated in the same Manner. It flowers in September.

The 7th Sort grows to the Height of six or seven Feet, with a strong Stem, toward the upper Part of which are produced two, three, or four Heads, composed of long compressed-pliable Leaves, of a Sea-green Colour, entire, and ending in obtuse Points; these are placed two Ways, lying over each other with their Edges the same Way. The Flowers are produced in short loose Spikes, which are of a red Colour, and appear at different Times of the Year.

The 8th Sort is an humble Plant, seldom rising more than a Foot high; the Leaves grow near the Ground, which are broad at their Base, where they embrace the Stalk, and gradually diminish to a Point; they are of a Sea-green Colour, with some white Spots; their Edges, and also their upper Parts below and above, are beset with pretty sharp Spines; the Flowers grow in

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loose Spikes, the tubulous Part being red, and the Brim of a light green Colour.

The 9th Sort is a low Plant, seldom rising above eight Inches high. The Leaves of this are triangular, and turn back at their Extremity; they are fleshy and entire, their Edges being very slightly sawed. These are curiously veined and spotted, somewhat like the Feathers on a Partridge's Breast, from whence it had the Name. The Flowers grow in very loose Spikes, upon Stalks about one Foot high; they are of a fine red Colour tipped with Green. This will live in a good Green-house through the Winter.

I have raised a Variety of this from Seeds which I received from the *Cape of Good Hope*, with broader and flatter Leaves, which spread more than those of the former, and are not so beautifully spotted; but as these Plants have not flowered yet, so I do not know if it will prove to be a distinct Species.

The 10th Sort is also a very low Plant, never rising to have a Stalk; the Leaves are broad at their Base, but are tapering to a Point where they are triangular; these are beset on their Edges, and both Surfaces, with soft Spines, very closely, from whence this Plant had the Name of Hedgehog Aloe. The Flowers grow in a loose Head, on the Top of the Stalk, which is very thick, but seldom a Foot high: They are of a fine red Colour below, but of a pale Green above. This Sort may be preserved through the Winter in a good Green-house, and placed in the open Air in Summer.

The 11th Sort grows near a Foot high, and is furnished with triangular Leaves, from the Ground upward; these are of a dark green Colour, and are placed in Form of a Triangle; the Flowers grow thinly upon very slender Foot Stalks, and are of an herbaceous Colour, and their upper Part turns backward. This Sort requires a moderate Warmth in Winter, so should be placed in a cool Part of the Stove.

The 12th Sort grows somewhat like the former, being beset with Leaves from the Bottom, but these are rounder, and end in sharp Points; the Flowers grow upon taller Stalks, which branch out and grow in long close Spikes. There is a Variety of this Sort which has been raised from Seeds, which is much larger, the Leaves thicker, and the Flowers grow upon taller Stalks, but this is only a feminal Variety.

This Sort may be preserved through the Winter in a good Green-house, but must have very little Water given it during the cold Weather.

The 13th Sort grows with its Leaves near the Ground, which are about six Inches in Length, and shaped like a Tongue, from whence it had the Title of Tongue Aloe. The Flowers grow in slender loose Spikes, each hanging downward, are of a red Colour below, and Green at the Top. This is pretty hardy, so may be kept in a common Green-house in Winter and set abroad in Summer. There is a Variety of this Sort, with Leaves much more spotted.

The 14th Sort is of humble Growth; the Leaves come out on every Side without Order near the Ground, they are thick, triangular at their Ends, and closely studded with white Protuberances, from whence it was called Pearl Aloe. There is a smaller Sort of this which hath been long preserved in the *English* Gardens,

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but the Manner of its flowering being the same, I suspect it to be only a Variety. This may be preserved through the Winter in a common Green-house. It flowers at different Seasons of the Year.

The 15th Sort is the true Succotrine Aloe, from whence the best Sort of Aloe for Use in Medicine is produced. This hath long narrow succulent Leaves, which come out without any Order, and form large Heads. The Stalks grow three or four Feet high, and have two, three, and sometimes four of these Heads, branching out from it: The lower Leaves spread out on every Side, but the upper Leaves turn inward toward the Center; the Flowers grow in long Spikes, upon Stalks about two Feet high, each standing on a pretty long Foot Stalk; they are of a bright red Colour tipped with Green: These generally appear in Winter. This Sort may be preserved through the Winter in a warm Green-house, but the Plants so managed will not flower so frequently, as those which have a moderate Degree of Warmth in Winter.

The 16th Sort resembles the 8th in some Particulars, but the Leaves are much broader, and spread on every Side; whereas those of the 8th are ranged only two Ways, and are narrow. This Sort flowers but seldom, whereas the 16th flowers annually in the Spring. This Plant is hardy, so may be kept through the Winter in a common Green-house.

The 17th Sort never rises from the Ground, but the Leaves spread flat on the Surface; these are plain, succulent, and triangular toward their End. The Borders of the Leaves, and also the Ridge of the Angle on their under Side, are closely beset with soft white Spines. The Flower Stalk rises about a Foot high, is very slender, and hath three or four small herbaceous Flowers standing at a Distance from each other. These are tubulous, and cut into six Parts at the Brim, which turn backward. This Sort is tender, so should be placed in Winter in a moderate Degree of Heat, and must have little Water. It never puts out Offsets, so is generally increased by planting of the Leaves.

The 18th Sort is also a small Plant growing near the Ground; the Leaves of this Sort are almost cylindrical toward their Base, but angular near their Ends, and are set with short soft Spines at the Angles: These Leaves are shorter and of a darker green Colour than those of the former Sort, and the Plants produce many Suckers on every Side. I have raised a Variety of this from Seeds, which hath shorter, whiter, and smoother Leaves, but this hath not yet flowered. This will live in a common Green-house in Winter.

The 19th Sort hath very short thick succulent Leaves, which are compressed on their upper Side like a Cushion, from whence it had the Name. This grows very close to the Ground, and puts out Suckers on every Side: The Flowers grow on slender Stalks, and are of an herbaceous Colour. This may be preserved through the Winter in a good Green-house, but should have very little Water during that Season, especially when it hath no artificial Heat.

The 20th Sort hath long narrow Tongue-shaped Leaves, which are hollowed on their upper Side, but Keel-shaped below: These are closely studded on every Side, with small white Protuberances, from whence

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the Plant hath had the Title of Pearl Tongue Aloe. The Flowers of this Kind grow on pretty tall Stalks, and form loose Spikes, each hanging downward: They are of a beautiful red Colour, tipped with Green. This Sort produces Offsets in Plenty, and is so hardy as to live in a common Green-house through the Winter. It flowers at different Seasons of the Year.

The 21st Sort hath some Resemblance to the last, but the Leaves are much broader and thicker; these spread out every Way, and are not so concave on their upper Surface, nor are the Protuberances so large as those of the former; the Flowers are of a paler Colour, and the Spikes are shorter. I have raised Plants from the Seeds of this Sort, which have varied from the Original, but none of them approached near the twentieth Sort. This is as hardy as the former Sort.

The 22d Sort hath knobbed creeping fleshy Roots, which spread over the Pots; the Leaves come up single, are narrow at Bottom, wide in the Middle, where they are waved on their Edges, and decrease again at their Extremities; they are about a Foot and a Half long, and four Inches wide in their broadest Part; these are of a dark green Colour, marbled over with White. The Flower Stem arises immediately from the Root, grows about two Feet high, the upper Part being closely set with very white Flowers which are tubulous, and cut into six Parts, which are reflexed back, so as to have much the Appearance of a large single Hyacinth. This Plant increases plentifully by its creeping Roots, but is very tender, so must constantly remain in the Stove. It usually flowers in July.

The 23d Sort is a low Plant with creeping fleshy Roots, the Leaves are about nine Inches long, and one and a Half broad at Bottom, gradually diminishing to the Top where it ends in a Point. The Flowers of this I have not seen, nor have I yet heard of its flowering in Europe; for in the Garden at Amsterdam, where I saw more than fifty Pots of this Plant, the Gardener assured me neither of them had then flowered. This Sort increases very fast by Suckers from the Root, but is tender, so must be constantly kept in the Stove.

The 24th Sort rises to the Height of eight or ten Feet, with a strong Stem; the Leaves grow on the Top, which closely embrace the Stalk; these come out irregularly, and spread every Way; they are near four Inches broad at their Base, and diminish gradually to the Top, where they end in a Spine. These are near two Feet long, of a dark green Colour, and closely beset with short thick Spines on every Side. This Sort hath not as yet flowered in England, nor does it put out Suckers, so that it is difficult to increase. It must have a warm Green-house in Winter and very little Water.

The 25th Sort hath very long narrow triangular Leaves, shaped like those of the Bull-rush; the Flowers are produced in close thick Spikes, upon Stalks near three Feet high, of an Orange Colour, having six yellow Stamina, which come out beyond the Tube of the Flower; so that when the Plants are strong, and produce large Spikes, they make a fine Appearance. It flowers in August and September. There is a Variety of this with narrower Leaves, and longer Spikes of Flowers.

The Soil in which these Plants thrive best, is one Half fresh light Earth from a Common (and if the

Turf is taken with it and rotted, it is much better); the rest should be white Sea Sand and sifted Lime Rubbish, of each of these two a fourth Part; mix these together six or eight Months at least before it is used, observing to turn it over often in this Time.

The Middle of July is a proper Season to shift these Plants; at which Time you may take them out of the Pots, and with your Fingers open the Roots, and shake out as much of the Earth as possible, taking off all dead or mouldy Roots, but do not wound or break the young fresh ones: Then fill the Pot about three Parts full of the above-mentioned Earth, putting a few Stones in the Bottom of the Pot, to drain off the Moisture; and after placing the Roots of the Plant in such a Manner as to prevent their interfering too much with each other, put in as much of the same Earth, as to fill the Pot almost to the Rim, and shake the Plant, so as to let the Earth in between the Roots; and then with your Hand settle it close to the Roots of the Plant, to keep it steady in the Pot; then water them gently, and set them abroad in a shady Place, where they may remain for three Weeks, giving them gentle Waterings, if the Weather should prove hot and dry.

Toward the latter End of September, in a dry Day, remove them into the House again, observing to give them as much free open Air as possible, while the Weather holds warm; but, if the Nights are cool, you must shut up the Glasses, and give them Air only in the Day; and, as the Cold increases, you must decrease opening the Glasses, but give them gentle Waterings often, till the Middle of October, when you must abate them, according to the Heat of the House in which they are kept. Those Plants which are placed in a Stove, will require to be watered at least once a Week, most Part of the Winter; whereas those which are kept in a Green-house without artificial Heat, should not be watered oftener in Winter than once a Month.

When these hardier Sorts of Aloes are placed abroad in Summer, they should have but little Water given them; and if much Rain should fall during the Time they are abroad, they should be screened from it: For when they imbibe much Wet in Summer, they frequently rot the following Winter, especially if they are not kept in a moderate warm Air. Therefore, those who choose to treat these Plants hardily, should be cautious of their receiving too much Moisture.

The tender Sorts should constantly remain in the Stove, or be removed in the Summer to an airy Glass Case, where they may have free Air in warm Weather, but be protected from Rain and Cold. With this Management the Plants will thrive and increase, and such of them as usually flower, may be expected to produce them in Beauty at their Seasons.

The hardier Sorts thrive much better when they are exposed in Summer, and secured from the Cold and Rain in Winter, than if they are treated more tenderly. For when they are placed in a Stove, they are kept growing all the Winter, whereby they are drawn up weak; and although they will flower oftener when they have a moderate Share of Heat, yet in two or three Years, the Plants will not appear so sightly as those which are more hardily treated.

The 25th Sort is hardy enough to live abroad in mild

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mild Winters, if planted in a warm Border and dry Soil; but as they are often destroyed in severe Winters, so it is proper to keep some Plants in Pots, which may be sheltered in Winter under a Frame, to preserve the Sort. This is propagated by Seeds, which the Plants generally produce in Plenty: The Seeds must be sown in Pots soon after they are ripe, and in Winter should be sheltered under a common hot Bed Frame: In Spring the Plants will come up, when they should be inured to bear the open Air by Degrees; and when large enough to remove, some of them should be planted in Pots, and others in a warm Border, where they will require to be sheltered the following Winter, as they will not have obtained sufficient Strength to resist the Cold.

Most of these Aloes are increased by Offsets, which should be taken from the Mother Plant, at the Time when they are shifted, and must be planted in very small Pots, filled with the same Earth as was directed for the old Plants; but if, in taking the Suckers off, you observe that Part which joined to the Mother Root to be moist, you must let them lie out of the Ground in a shady dry Place two or three Days to dry before they are planted, otherwise they are very subject to rot.

After planting, let them remain in a shady Place (as was before directed in shifting the old Plants) for a Fortnight, when you should remove the tender Kinds to a very moderate hot Bed, plunging the Pots therein, which will greatly facilitate their taking new Root; but observe to shade the Glasses in the Middle of the Day, and to give them a great Share of Air.

Toward the Middle of *August*, begin to harden these young Plants, by taking off the Glasses in good Weather, and by raising them at other Times with Bricks, that the Air may freely enter the Bed, which is absolutely necessary for their Growth, and to prepare them to be removed into the House, which must be done toward the End of *September*, and managed as before directed for the old Plants.

The *African* Aloes, for the most Part, afford Plenty of Suckers, by which they are increased; but those few that do not, may be most of them propagated, by taking off some of the under Leaves, laying them to dry for ten Days or a Fortnight, as was directed for the Offsets; then plant them in the same Soil as was directed for them, putting that Part of the Leaf which did adhere to the old Plant, about an Inch, or an Inch and a Half (according to the Size of the Leaf) into the Earth, giving them a little Water to settle the Earth about them; then plunge the Pots into a moderate hot Bed, observing to screen them from the Violence of the Sun, and give them gentle Refreshings with Water once a Week: The best Season for this is in *June*, that they may push out Heads before Winter.

The second Sort produces the Aloes commonly sold in the Shops for *Horses*, and is called *Aloe Hepatica*. But it is from the 15th Sort, the *Succotrine*, or best Sort of Aloes, is produced; which is done by cutting their Leaves transversely, and placing earthen Vessels under them to receive the Juice which drops from these cut Leaves; which Juice, when inspissated, becomes the Aloe which is used in Medicine. But I believe in making the coarser Sort of Aloes, they press the Leaves, whereby a greater Quantity of Juice is obtained: But this is not near so fine as the other.

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ALOE AMERICANA MURICATA. See *Agave*.

ALOE, the striped, is a Variety of the former.

ALOIDES. See *Stratiotes*.

ALOPECUROS Fox-tail, a kind of Grass.

ALPINIA, so called after *Prosper Alpinus*.

The Characters are,

It hath a trifid Empalement, upon which rests the Germen. The Flower is of one Leaf, which is unequally divided at the Top into four Parts, and resembles a personated Flower; the upper Segment which resembles the Helmet, and also the two Side Segments, are indented in the Middle, and the lower one is divided into three Parts at the Brim; in the Center is placed the round Germen, supporting a single Style crowned with a three cornered Stigma: This is attended by a single Stamina fixed to the Tube of the Flower, which is crowned with a very narrow Summit. After the Flower is past, the Germen becomes an oval fleshy Fruit, divided into three Parts, inclosing several oval Seeds, which have Tails.

We know but one Species of this Genus, viz.

ALPINIA Racemosa alba Cannacori foliis. Nov. Gen. White branching Alpinia, with Leaves like the Reed.

This Plant is a Native of the *West-Indies*, from whence it has been brought into some of the curious Gardens of *Europe*, where it must be preserved in a warm Stove, and the Pots plunged into a hot Bed of Tanners Bark, otherwise it will not thrive in this Country. The Leaves decay every Winter, and are pushed out from the Roots every Spring, like the *Ginger* and *Maranta*; so should be managed in the same Manner as is directed for those two Plants, and may be propagated by parting the Roots when the Leaves decay.

ALTHÆA, Marshmallow.

The Characters are,

The Flower hath a double Empalement, the outer is of one Leaf, and is unequally divided into nine narrow Segments at the Brim; the inner one is also of one Leaf, cut into five broad acute Segments at the Top, these are both permanent. The Flower hath five Petals which coalesce at their Base, but spread open above and are shaped like an Heart. There are many Stamina joined below and form a Kind of Cylinder, but are loose above, and are inserted in the Column. In the Center is placed the orbicular Germen, supporting a short cylindrical Style, crowned with numerous Stigma, which are of equal Length with the Stamina. The Empalement afterward becomes an orbicular depressed Capsule, divided into several Cells, each containing one compressed Kidney-shaped Seed.

The Species are,

1. ALTHÆA foliis simplicibus acuminatis acutè dentatis tomentosis. Marshmallow with single woolly Leaves, indented in sharp Segments. Common Marshmallow.

2. ALTHÆA foliis rotundioribus angulatis tomentosis. Marshmallow with angular woolly pointed Leaves.

3. ALTHÆA foliis trifidis piloso-hispidis. Hort. Cliff. 349. Marshmallow with trifid hairy pungent Leaves.

4. ALTHÆA foliis inferioribus palmatis superioribus digitatis caule fruticoso. Hort. Upsal. 205. Marshmallow with the under Leaves shaped like a Hand, the upper Leaves more divided, and a shrubby Stalk.

The 1st Sort is the common Marshmallow, which grows naturally in moist Places in divers Parts of *England*, and is frequently used in Medicine. This hath a perennial

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perennial Root and an annual Stalk, which perishes every Autumn. The Stalks of this Plant grow erect, to the Height of four or five Feet, and put out a few lateral Branches on their Sides; these are garnished with Leaves which are hoary and soft to the Touch; they are angular, and placed alternately on the Branches; the Flowers come out from the Wings of the Leaves, which are shaped like those of the Mallow, but smaller and of a pale Colour. These appear in June and July, and the Seeds ripen in September. It may be propagated fast enough, either by Seeds or parting their Roots. When propagated by Seeds they should be sown in Spring, but if by parting of the Roots, the best Time is in Autumn, when the Stalks decay. It will thrive in any Soil or Situation, but in moist Places will grow larger than in dry Land. The Plants should not be nearer together than two Feet, for their Roots spread wide on every Side.

The 2d Sort is somewhat like the first, but the Leaves are not so long, nor do they end in a sharp Point, but are angular, and rounder. I have cultivated this in the Chelsea Garden many Years, and find it retains its Difference.

The 3d Sort grows naturally in Spain and Portugal, from whence I have received the Seeds. This is a low Plant, whose Branches trail on the Ground, unless supported by Stakes. The Leaves and Stalks are beset with strong Hairs, the Flowers come out at the Wings of the Stalks, and are smaller than those of the common Sort, having purplish Bottoms. The Leaves are deeply cut into three Parts, and have long Footstalks; the Stalks are woody but seldom last more than two Years.

If the Seeds of this Sort are sown in April, the Plants will flower in July, and the Seeds ripen in September. They should be sown in the Places where they are to remain, for as the Roots shoot deep into the Ground, so unless the Plants are removed very young, they seldom survive Transplanting.

The 4th Sort has a woody Stem, rising to the Height of four or five Feet, and puts out many Side Branches; these are garnished with Leaves of different Shapes; those which are on the lower Part of the Branches are like a Hand, very slightly cut toward their Outside, but those which are placed on the upper Part of the Branches, are deeply cut into several Parts; these are hairy, and grow alternately on the Branches; the Flowers come out from the Wings of the Stalks in the same Manner as the other Sorts, but are not so large as those of the common Marshmallow; they are of a deeper red Colour, and the Empalement is much larger. This Sort seldom flowers the first Year, unless the Summer proves warm; but when the Plants live through the Winter, they will flower early the following Summer, so will produce good Seeds. It grows naturally in Hungary and Istria, from which Places I have received the Seeds.

It is propagated by Seeds, sown in Spring, in the Place where the Plants are to remain; or if otherwise, the Plants must be transplanted young, else they will not succeed. They should have a sheltered Situation and dry Soil, otherwise they will not live through the Winter in England. When these Plants grow in a stony Soil, or in Lime Rubbish, they will be stunted in their Growth, but they will have less Sap in their Branches, so will better endure the Cold of this Climate. This Sort seldom continues longer than two Years in England, but as the Seeds ripen here, so the Plants may be had in Plenty.

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ALTHÆA FRUTEX. See Hibiscus and Lavatera.

ALYSSOIDES. See Alyssum and Lunaria.

ALYSSON ALPINUM LUTEUM. See Draba.

ALYSSON SEGETUM. See Myagrum.

ALYSSON SERPILLI FOLIO. See Clypeola.

ALYSSON VERONICE FOLIO. See Draba.

ALYSSON VULGARE. See Draba.

ALYSSUM, Madwort.

The Characters are,

The Flower hath an oblong four leaved Empalement, which falls away. It hath four Petals in Form of a Cross, which spread open above the Empalement. There are six Stamina, two of which are shorter than the other four; these are crowned with broad Summits; in the Center of the Flower is situated the oval Germen, supporting a single Style, crowned with an obtuse Stigma. After the Flower is past, the Germen becomes a globular or compressed Seed Vessel, in which are lodged several compressed Seeds.

The Species are,

1. ALYSSUM caulibus frutescentibus paniculatis foliis lanceolatis undulatis integris. Prod. Leyd. 331. Madwort with Shrubby Stalks, Flowers growing in Panicles, and whole Spear-shaped waved Leaves.

2. ALYSSUM foliis lanceolato-linearibus acutis integerrimis caulibus procumbentibus perennantibus. H. C. Madwort with whole Spear-shaped pointed Leaves, and triperennial Stalks.

3. ALYSSUM ramis senilibus spiniformibus nudis. H. C. Madwort whose older Branches have naked Spines.

4. ALYSSUM ramis suffruticosis diffusis foliis punctato-ecbinatis. Hort. Upsal. 185. Madwort with shrubby diffused Branches and Leaves, having prickly Punctures.

5. ALYSSUM caule erecto foliis lanceolatis incanis integerrimis floribus corymbosis. Hort. Cliff. 332. Madwort with an erect Stalk, hoary Spear-shaped Leaves which are entire, and Flowers collected into round Heads. Hoary shrubby Madwort.

6. ALYSSUM caule erecto herbaceo filiculis sessilibus ovalibus compresso planis petalis acuminate. Lin. Sp. Plant. 651. Madwort with an erect herbaceous Stalk, Pods growing close to the Stalks, which are oval and compressed, and the Flower Leaves pointed.

7. ALYSSUM caule herbaceo foliis lanceolatis dentatis filiculis inflatis. L. S. P. 651. Madwort with an herbaceous Stalk, Spear-shaped indented Leaves, and swollen Seed Vessels.

8. ALYSSUM caule herbaceo erecto foliis incanis lanceolatis integerrimis filiculis inflatis. Lin. Sp. Plant. 651. Madwort with an erect herbaceous Stalk, hoary Spear-shaped entire Leaves, and a swelling Seed Vessel.

The 1st Sort is a low perennial Plant, with a thick fleshy Stem, which seldom rises more than one Foot high, but divides into many less Branches which grow near the Ground; these are again divided into many smaller Branches, so that a single Plant will spread to a considerable Distance, and form a large Bushy head: The Branches are garnished with long Spear shaped Leaves, which are hoary and waved on their Edges; these are placed on without any Order, and continue through the Year. The Flowers are produced in loose Panicles, at the extremity of every Branch, and are of a bright yellow Colour, consisting of four Petals, which are placed in Form of a Cross: These being numerous, make a fine Appearance.

Appearance the latter End of *April*, or the beginning of *May*, and if the Season is moderate, will continue three Weeks in Beauty. The Seeds ripen in *July*, but it is only from young Plants that Seeds can be expected; for the old Plants or those raised from Slips or Cuttings, rarely produce Seeds in *England*. This Plant was found growing naturally in *Candia* by Dr. *Tournefort*, who sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and from thence the other Gardens of *Europe* have been furnished with it.

This Plant is hardy, and although brought from a more southerly Climate, yet, if planted in a dry, lean, or rubbishy Soil, will endure our severest Winters abroad. It is increased by sowing the Seeds in *March* in a light sandy Soil, or by planting Cuttings in *April* or *May*; which are very apt to take Root, if kept shaded in the Heat of the Day, and gently refreshed with Water.

The 2d Sort seldom continues above two or three Years with us, and must therefore be often sown to preserve it; or if the Seeds are suffered to fall, the Plants will rise without any Trouble. This Plant spreads itself upon the Ground, and never rises to any Height. It produces, at the Extremity of its Branches, very pretty Tufts of small white Flowers; of which the Plant is seldom destitute for six or seven Months successively, for which Reason it deserves a Place in the Gardens of the Curious. This will also grow from Cuttings, if planted and managed as the former.

The 3d Sort hath ligneous Branches which rise about two Feet high; these are armed with small Spines; the Leaves are hoary, Spear-shaped and thinly placed on the Stalks without any Order. The Flowers are white, Cross-shaped, and grow in small Clusters at the Extremity of the Branches. After the Flowers are past, the Germen turns to an oblong Seed Vessel, containing several round Seeds.

This may be propagated in the same Manner as the 1st Sort, either by Seeds or Slips; and when the Plants grow in Rubbish, or on old Walls, they will last much longer, and endure the Cold of our Winters, better than those which are in a good Soil. It grows naturally in *Spain*, *Italy*, and the South of *France*.

The 4th Sort hath trailing Branches which lie on the Ground; these are garnished with oblong hoary Leaves, which are rough to the Touch, and are placed alternately on every Side of the Branches; the Flowers are produced in small Clusters at the Extremity of the Branches, which are of a dark yellow Colour, and are succeeded by Seed Vessels shaped like those of the 3d Sort. This grows naturally upon Rocks and Ruins, in *Burgundy*, and some other Parts of *France*, as also about *Basil*. It may be propagated in the same Manner as the former Sorts, and when it grows in Rubbish, the Plants will continue some Years; but in rich Ground, they seldom live through the Winter in *England*.

The 5th Sort grows to the Height of two Feet, having ligneous Stalks, which divide into several Branches toward the Top. These are garnished with hoary Spear-shaped Leaves, placed alternately on the Branches: At the Extremity of every Shoot, the Flowers are produced in round Bunches, which are small, white, and Cross-shaped; these are succeeded by oval Seed Vessels, which are full of brown Seeds. This Plant grows naturally

in the South of *France*, *Spain*, and *Italy*, chiefly on rocky or gravelly Soils. When sown in rich Soil it seldom survives the Winter, but in Lime Rubbish, or upon old Walls, it will continue several Years. It flowers in *June*, *July*, *August*, and *September*, and the Seeds ripen soon after; which if permitted to scatter, the Plants will come up, and require little Care.

The 6th Sort is a biennial Plant, with an herbaceous Stalk, garnished with oblong hoary Leaves, placed alternately; the Flowers come out from the Wings of the Stalks single, these grow very close to the Stalk, and are succeeded by oval compressed Seed Vessels, shaped like those of the *Lunaria*, which contain many flat Seeds. This grows naturally in *Spain* and *Portugal*, from whence I have received the Seeds. It is propagated by Seeds, which must be sown upon dry Ground, or Lime Rubbish; for in rich Land the Plants will grow too vigorous in Summer, and generally rot off and decay in Autumn.

The 7th Sort is a low spreading Plant, with a thick fleshy Stalk, which divides into many smaller Branches; spreading near the Ground, and garnished with oblong hoary Leaves which continue through the Year: The Flowers are produced in small Clusters at the Extremity of the Branches; these are of a bright yellow Colour, consisting of four Petals placed in Form of a Cross. After the Flower is past, the Germen becomes an oval swelling Seed Vessel, filled with roundish Seeds. This Sort grows naturally in the Islands of the *Archipelago*, but is hardy enough to live in the open Air in *England*, in a dry Soil and a warm Situation. It is propagated by Seeds, and seldom lasts longer than two or three Years.

The 8th Sort grows more erect, having an herbaceous Stalk, which sends out a few lateral Branches toward the Top, these are garnished with oblong hoary Leaves. The Flowers grow in small Clusters at the Extremity of the Branches; these are succeeded by oval swelling Seed Vessels like the former. This Plant seldom continues longer than two Years in *England*; it must have a warm dry Situation, otherwise it will not live in the open Air. It is propagated by Seeds, which should be sown in *August*, soon after they are ripe; and if a few of them are potted in *October*, and sheltered under a Frame in Winter, they will flower the following *June*, so good Seeds may be obtained the same Year; for those Plants which arise early in the Year, grow luxuriantly in Summer, so do not often live through the Winter.

AMARANTHOIDES. See *Gomphrena*.

AMARANTHUS. Amaranth, or Flower-gentle.

The Characters are,

It hath male and female Flowers in the same Plant. The Flower hath no Petals, but the Empalement consists of three or five pointed Spear-shaped Leaves which are coloured and permanent; this is common to both Sexes. The male Flowers have in some Species three, and in others five slender Stamina, which are of the same Length with the Empalement; these are crowned with oblong Summits. The Female Flowers have an oval Germen, supporting three short Awl-shaped Styles, which are crowned with simple Stigma. The Empalement afterward becomes an oval coloured Seed Vessel having one Cell, in which is lodged a single globular Seed.

The Species are,

1. AMARANTHUS capitellus triandris subrotundis amplexicaulibus foliis lanceolatis acuminatis. Lin. Sp. Plant.

989. Flower-gentle with roundish Heads, Flowers with three Stamina embracing the Stalks, and pointed Spear-shaped Leaves. *Amaranthus tricolor*, or three coloured.

2. *AMARANTHUS capitellus triandris subrotundis sessilibus foliis lanceolatis sparsis*. Lin. Sp. Pl. 989. Flower-gentle with three Stamina, roundish Heads growing close to the Stalk, and Spear-shaped Leaves growing thinly on the Stalks. *Amaranthus bicolor*.

3. *AMARANTHUS capitellus triandris subrotundis axillaribus spicisque glomerata terminali foliis ovato-cordatis petiolo brevioribus*. Lin. Sp. Plant. 989. Flower-gentle with three Stamina, roundish Heads growing from the Wings of the Stalks in roundish Spikes, and oval Heart-shaped Leaves with short Foot Stalks.

4. *AMARANTHUS racemis pentandris cylindricis pendulus longissimis*. Hort. Cliff. 443. Flower-gentle with five Stamina and very long hanging cylindrical Spikes, commonly called, *Love lies a bleeding*.

5. *AMARANTHUS racemis cylindricis pendulis, caule erecto arboreo*. Flower-gentle with hanging cylindrical Spikes, and an erect Tree like Stalk. Tree *Amaranthus*.

6. *AMARANTHUS spicis triandris erectis conglomeratis foliis ovatis retusis*. Lin. Sp. Plant. 990. Flower-gentle with erect Spikes growing close, and oval blunt Leaves.

7. *AMARANTHUS spicis cylindricis brevibus foliis ovato lanceolatis petiolis longissimis*. Flower-gentle with short cylindrical Spikes, and oval Spear-shaped Leaves with very long Foot Stalks.

8. *AMARANTHUS floribus glomeratis lateralibus foliis ovatis retusis caule diffuso*. Lin. Sp. Plant. 990. Flower-gentle with Flowers collected in small Heads at the Joints of the Stalks, oval-blunt Leaves, and scattering Stalks. The smaller white Blite.

9. *AMARANTHUS floribus triandris conglomeratis axillaribus foliis lanceolatis obtusis*. Lin. Sp. Plant. 990. Flower-gentle with Flowers having three Stamina, which grow in Clusters from the Wings of the Stalks, and blunt Spear-shaped Leaves. Pellitory leaved Blite.

10. *AMARANTHUS racemis pentandris cylindricis horizontalibus caule inermi*. Lin. Sp. Plant. 990. Flower-gentle with five Stamina, cylindrical Spikes growing horizontally, and a smooth Stalk. Wild New England Blite with green Spikes.

11. *AMARANTHUS racemis pentandris cylindricis erectis caule inermi*. Hort. Cliff. 444. Flower-gentle with five Stamina, erect cylindrical Spikes, and a smooth Stalk. Purple Flower-gentle.

12. *AMARANTHUS racemis pentandris cylindricis erectis axillis spinosis*. Hort. Cliff. 444. Flower-gentle with five Stamina, upright cylindrical Spikes and Spines at the Joints of the Stalks.

13. *AMARANTHUS racemis cylindricis lateralibus terminalibusque cruciatim positis*. Plant. 22. Flower-gentle with cylindrical Spikes placed crossways.

14. *AMARANTHUS racemis pentandris lateralibus terminalibusque caule flexuoso ramis retrocurvatis*. Lin. Sp. Pl. 991. Flower-gentle with five Stamina, Spikes proceeding from the Wings of the Stalks, and also at their Extremities, and flexible recurved Branches.

The 1st Sort has been long cultivated in Gardens for the Beauty of its variegated Leaves, which are of three Colours, viz. Green, Yellow, and Red, these are very elegantly mixed: And when the Plants are in full Vi-

gour, the Leaves are large, and closely set from the Bottom to the Top of the Stalks, and the Branches form a Sort of Pyramid; so that there is not a more beautiful Plant than this, when it is in full Lustre. I have raised them to more than five Feet high, branching out on every Side, from the Ground upward, and forming regular Pyramids; the Branches were garnished with Leaves their whole Length, which were large and finely coloured, and in warm Summers, have continued in Beauty two Months, during which Time there was not any Plant to be compared with them. From the Leaves of this Plant being party coloured, like the Feathers of Parrots, some Botanists have separated this Species from the others, and constituted a Genus of it, by the Title of *Psittacus*.

The 2d Sort hath been introduced into the English Gardens much later than the former. This grows to the same Height, and in the Manner of its Growth greatly resembles it; but the Leaves have only two Colours, which are an obscure Purple, and a bright Crimson; these are so blended as to set off each other, and when the Plants are vigorous, they make a fine Appearance.

The 3d Sort hath no great Beauty; it grows about three Feet high with an upright Stalk, which sends out some lateral Branches toward the Top; these are garnished with oval Heart-shaped Leaves. The Flowers are produced at the Wings of the Stalks in roundish Spikes, as also at the Extremity of the Branches, but have very little Beauty, so do not deserve a Place in the Flower Garden. The young Plants of this Sort are gathered to boil instead of Spinach by the Inhabitants of India, where it grows naturally, and from thence I received the Seeds of it as an esculent Plant.

The 4th Sort grows naturally in America, from whence I received the Seeds: This grows with an upright Stem, upward of three Feet high; the Leaves and Stalks are of a pale green Colour; the Spikes of Flowers are produced from the Wings of the Stalks, and in Clusters at the Extremity of the Branches: They are very long and hang downward, of a bright purple Colour. I have measured some of the Spikes, which were two Feet and a Half long, so that many of them reached the Ground.

The 5th Sort hath a strong Stem, which rises to the Height of seven or eight Feet, sending forth many horizontal Branches toward the Top; these are garnished with oblong rough green Leaves. At the Extremity of every Shoot, the cylindrical Spikes of a purple Colour are produced which hang downward, but these are seldom half the Length of those of the former Sort, and are much thicker. This is the Sort of Amaranth, which is directed by the College to be used in Medicine.

The 6th Sort grows near three Feet high, putting out several Side Branches, which are garnished with oval blunt Leaves; at the Ends of the Branches, the Spikes are produced in Clusters and grow erect, these are of a deep purple Colour.

The 7th Sort grows near four Feet high, the Stalks are inclining to Red, the Leaves are of an oval Spear-shaped Figure, green Colour, marked with purple Spots, and have very long Foot Stalks. The Spikes come out at the Extremity of the Branches in Clusters, as also from the Wings of the Stalks; these are of a pale green Colour, and grow erect. I have received the Seeds of this Sort from Portugal, by the Title of *Bredos*, recommending.

mending it to be cultivated as a culinary Herb : And also from *America*, by the Title of *Cururu*, or *Caterpillar*, and recommended for the same Purpose ; but upon Trial, I found it greatly inferior to Spinach, and other Herbs which we have here in Plenty. Therefore however useful it may be to the Inhabitants of those warm Countries, where many of our common Vegetables will not thrive, it is not worth the Trouble of cultivating in *England*, especially as it is only in the Summer Months that the Plants will come up in the full Ground. There are two or three more Species of this Genus, which grow naturally in the *West Indies*, and are used for the same Purpose, under the same Appellation of *Caterpillar*, *Cururu*, &c. Of these I have frequently received Seeds from thence.

The 8th Sort grows naturally in most of the warm Parts of *Europe*, and also in *America* ; for wherever it is permitted to scatter its Seeds, the Plants will come up the following Summer, and become troublesome Weeds, as will also the 9th Sort ; so these are seldom cultivated, as they are only preserved in Botanic Gardens for Variety. The Stalks of both these spread on the Ground.

The 10th Sort grows upward of three Feet high, and sends out many Side Branches ; these are hairy, and garnished with oblong rough Leaves. The Spikes are produced from the Wings of the Stalks, as also at the Extremity of the Branches, growing horizontally, and are of a green Colour. There is little Beauty in this Plant, therefore it is seldom admitted to Gardens.

The 11th Sort has been long in *England*, and was formerly propagated in Flower Gardens, but is now become a common Weed, frequently growing upon Dunghills : For as the Plants abound with Seeds, so where they are permitted to scatter, Plenty of the Plants will come up the following Summer. These Seeds will remain in the Ground several Years, and as often as they are turned up to the Surface, they will produce Plants ; so that when Plants are suffered to stand till their Seeds fall, there will be every Summer fresh Crops for several Years.

The 12th Sort grows about two Feet high, putting out many Side Branches, so as to form a bushy Plant ; the Leaves are oblong, and the Spikes come out at every Joint, where the Stalks are armed with sharp Prickles ; and at the Extremity of the Branches, the Spikes are longer than those of the Side : These are slender, and are inclining to a brown Colour, so make no great Figure, therefore is rarely allowed to have a Place in Gardens.

The Seeds of the 13th Sort were sent me from the *Bahama Islands*, as an esculent Plant, bearing fine Flowers. This grows three Feet high, with purple Stalks and Leaves ; the Spikes are short and cylindrical ; these are frequently produced from the Wings of the Stalks, but at the Extremity of the Stalk arises a large Cluster of Spikes which are placed crosswise, with one upright Spike in the Middle. These are of a bright purple Colour at first, but afterward change to a darker Colour, as the Seeds ripen.

The 14th Sort is a Native of *North America*, from whence the Seeds were sent to *Europe*, but is now become a common Weed in many Gardens near *London*, so is seldom allowed a Place, except in Botanic Gardens.

The Sorts which are worthy of a Place in the Pleasure Garden, are particularly the 1st and 2d. These are

tender, and require some Art and Care to bring them to any perfection in *England*, therefore their Management will be hereafter more particularly inserted.

Next to these are the 4th, 5th, and 13th Sorts. The Seeds of these should be sown upon a moderate hot Bed toward the End of *March*, and when the Plants come up, they should have a large Share of Air admitted to them in mild Weather, to prevent their drawing up weak. When they are large enough to transplant there should be another moderate hot Bed provided, to which they should be removed, placing them at six Inches Distance every Way, observing to water them, as also to shade them from the Sun until they have taken new Root, after which the Air should be freely admitted to them, at all times when the Weather is favourable ; their Waterings should be frequent, but not given in greater Quantities. As the Plants advance, and the Warmth of the Season increases, they should have a greater Share of Air, that by Degrees they may be hardened to bear the open Air. Toward the end of *June* they may be taken up with large Balls of Earth to their Roots, and planted some into Pots, and others into the Borders of the Pleasure Garden, observing to shade them until they have taken good Root ; after which they must be frequently watered in dry Weather, especially those in the Pots, for these will require Watering every Evening in warm dry Weather. The 5th Sort will not thrive in Pots, so should be planted in a rich light Soil, where if it is allowed Room, and plentifully watered in dry Weather, the Plants will grow to a very large Size, and make a fine Appearance.

The 12th Sort is also tender, so whoever is inclinable to cultivate that Plant, should treat it in the same Manner as is directed for the former.

The other Sorts are hardly enough to grow in the open Air, so may be sown on a Bed of light Earth in the Spring, and when the Plants are fit to remove, they may be transplanted into any Part of the Garden, where they will thrive, and produce Plenty of Seeds, which, if permitted to scatter, will stock the Garden with Plants.

I shall now proceed to the Culture of the most valuable Kinds, which are more generally cultivated in Gardens for their Beauty : *Viz.* the 1st and 2d Sorts.

These two Sorts of *Amaranth*s must be sown on a good hot Bed in *February*, or the beginning of *March* at farthest ; and in about a Fortnight's Time, if the Bed is in good Temper, the Plants will rise ; when you must prepare another hot Bed, covered with good rich light Earth, about four Inches thick ; then raise up the young Plants with your Finger, so as not to break off the tender Roots, and prick them into your new hot Bed about four Inches distant every Way, giving them a gentle Watering to settle the Earth to their Roots ; but in doing this be very cautious not to bear the young Plants down to the Ground by hasty Watering, which rarely rises again, or at least so as to recover their former Strength in a long Time, but very often rot in the Stems and die quite away.

In the Middle of the Day keep them screened with Mats from the great Heat of the Sun, and give them Air by raising up the Glasses with a small Stone ; and, if the Glasses are wet, it will be proper to turn them every Day, in good Weather, that they may dry ; for the

the Moisture which is occasioned by the Fermentation of the Dung, and Perspiration of the Plants, is of a noxious Quality, and very unkindly to Plants; so that if the Weather happens to prove bad, that you cannot turn your Glasses, it will be of great Service to your Plants to wipe off all the Moisture two or three Times a Day with a woollen Cloth, to prevent its dropping on the Plants. When they are firmly rooted and begin to grow, you must give them Air every Day, more or less, as the Weather is cold or hot, to prevent their drawing up too fast, which greatly weakens their Stems.

In about three Weeks or a Month, these Plants will have grown so as to meet, and will stand in need of another hot Bed, which should be of a moderate Temper, and covered with the same rich Earth about six Inches thick, in which they should be removed, observing to take them up with as much Earth about their Roots as possible, and plant them seven or eight Inches Distance every Way, giving them some Water to settle the Earth about their Roots; but be very careful not to water them heavily, so as to bear down the Plants, as before directed; and keep them shaded in the Heat of the Day, until they have taken fresh Roots; be sure to refresh them often gently with Water, and give them Air in Proportion to the Heat of the Weather, covering the Glasses with Mats every Night, lest the Cold chill your Beds, and stop the Growth of the Plants.

In the Beginning of May you must provide another hot Bed, which should be covered with a deep Frame, that your Plants may have room to grow. Upon this hot Bed you must set as many Three-penny Pots as can stand within the Camps of the Frame; these Pots must be filled with good rich Earth, and the Cavities between each Pot filled up with any common Earth, to prevent the Heat of the Bed from evaporating, and filling the Frame with noxious Steams; then with a Trowel, or some such Instrument, take up your Plants from the former hot Bed, with as much Earth as possible to the Roots, and place each single Plant in the Middle of one of the Pots, filling the Pot up with the Earth before described, and settle it close to the Root of the Plant with your Hands; water them gently, as before, and shade them in the Heat of the Day from the Violence of the Sun, by covering the Glasses with Mats; refresh them often with Water, and give them a good Quantity of Air in the Day-time.

In about three Weeks more these Plants will have grown to a considerable Size and Strength, so that you must now raise the Glasses very much in the Day-time; and when the Air is soft, and the Sun is clouded, draw off the Glasses, and expose them to the open Air, and repeat this as often as the Weather will permit; which will harden them by Degrees to be removed abroad into the Places where they are to remain the whole Season; but it is not advisable to set these Plants out until a Week in July, observing to do it when the Air is perfectly soft, and in a gentle Shower of Rain.

Let them at first be set near the Shelter of a Hedge for two or three Days, where they may be screened from the Violence of the Sun, and strong Winds, to which they must be inured by Degrees. These Plants, when grown to a good Stature, perspire freely, and must be every Day refreshed with Water, if the Weather proves hot and dry; otherwise they will stint, and never produce

so large Leaves, as those which are skilfully treated.

This is the proper Management, in order to have fine Amaranths; which, if rightly followed, and the Kinds are good, in a favourable Season, will produce wonderful large fine Leaves, and are the greatest Ornament to a good Garden for upwards of two Months.

When the Season proves cold, these Plants should be kept longer under the Glasses; and, if the Heat of the Bed is spent, there should be a fresh Bed made, either in a Glass Case, or where such a Conveniency is wanting, there may be one contrived by erecting some of the Lights which were placed over Cucumbers, round a hot Bed, and cover those with the same Lights on the Top, so as to resemble a Glass Stove. On this hot Bed you should place your Amaranths, at such a Distance from each other, as to allow them room to spread; observing to refresh them often with Water, and in warm Weather let them have Plenty of fresh Air. With this Management the Plants may be raised five or six Feet high, and their Leaves will come to the most beautiful Colours; after which they may be exposed to the open Air, and removed to adorn any Part of the Garden.

AMARANTHUS CRISTATUS or Cockscorn;

See Celosia.

AMARYLLIS, Lily-daffodil.

The Characters are,

It hath an oblong compressed Spatba, or Sheath, which encloses the Flower Buds, and opens Side Ways, grows dry, and is permanent; the Flower hath six Spear-shaped Petals; in the Center is situated the roundish furrowed Germen, supporting a slender Style, which is crowned with a three cornered Stigma; this is attended by six Awl-shaped Stamina, which are crowned with incumbent Summits. After the Flower is past, the Germen becomes an oval Capsule, opening in three Parts, having three Cells, which contain round Seeds.

The Species are,

1. AMARYLLIS spatbâ uniflorâ, corollâ equali, staminibus declinatis. Lin. Lily Daffodil with a single Flower in each Cover, which is equal, and declined Stamina. Yellow Autumnal Narcissus.
2. AMARYLLIS spatbâ uniflorâ, corollâ equali, pistillo declinato. H. C. Lily Daffodil with a single Flower in each Sheath, which has equal Petals, and the Pointal declining. Commonly called *Atamusco* Lily.
3. AMARYLLIS spatbâ uniflorâ, corollâ inæquali, genitalibus declinatis, H. C. Lily Daffodil with one Flower in each Cover, which has unequal Petals, and the Stamina and Style are declined. *Jacobæa* Lily.
4. AMARYLLIS spatbâ multiflorâ, corollis revolutis genitalibus strictis. H. Up. Lily Daffodil with many Flowers in one Cover; the Petals equal, spread open, and turned backward, with broken Stamina, commonly called *Guernsey* Lily.
5. AMARYLLIS spatbâ multiflorâ, corollis campanulatis equalibus, genitalibus declinatis. H. C. Lily Daffodil with many Flowers in one Cover; the Petals equal and Bell-shaped, and the Stamina declined. *Belladonna* Lily.
6. AMARYLLIS spatbâ multiflorâ corollis campanulatis marginibus reflexis genitalibus declinatis. Lily Daffodil with many Flowers in one Cover, the Petals equal and Bell-shaped, their Borders turning backward, and declining Stamina. *Mexican* Lily.

7. *AMARYLLIS spatbâ multiflorâ, corollis campanulatis æqualibus, scapo compresso longitudini umbellæ. Flor. Leyd. 36.* Lily Daffodil with many Flowers in one Cover; the Petals equal, and the Cover compressed the Length of the Umbel. *African Lily.*

8. *AMARYLLIS spatbâ multiflorâ, corollis campanulatis æqualibus, scapo tereti ancipiti. Flor. Leyd. 36.* Lily Daffodil with many Flowers in one Cover; the Petals equal, and the Cover opening two Ways. *Zeylon Lily.*

9. *AMARYLLIS spatbâ multiflorâ, foliis ciliatis. Flor. Leyd. 37.* Lily Daffodil with many Flowers in one Cover, and the Edges of the Leaves hairy. *African Scarlet Lily.*

10. *AMARYLLIS spatbâ uniflorâ, corollâ æquali, staminibus erectis.* Lily Daffodil with one Flower in a Cover, with equal Petals, and erect Stamina. Spring yellow Lily Narcissus.

11. *AMARYLLIS spatbâ multiflorâ corollis inæqualibus foliis linguiformibus. Buttn.* Lily Daffodil with many Flowers in a Cover, whose Petals are unequal, and Leaves shaped like a Tongue. *Brunswigia* of Dr. Heister.

12. *AMARYLLIS spatbâ triflorâ corollis campanulatis æqualibus genitalibus declinatis.* Lily Daffodil with three Flowers in each Cover, whose Petals are equal and Bell-shaped, with declining Stamina.

The 1st Sort is a very hardy Plant, which increases very fast by Offsets. The Season for transplanting these Roots is any time from May to the End of July, when their Leaves are decayed, after which it will be too late to remove them; for they will begin to push out new Fibres by the Middle of August, if the Season be moist, and many times they flower the Beginning of September; so that if they are then transplanted, it will spoil their flowering. This Plant will grow in any Soil or Situation; but it will thrive best in a fresh light dry Soil, and in an open Situation; i. e. not under the Dripping of Trees, nor too near to Walls. It is commonly called by the Gardeners, the yellow Autumnal Narcissus, &c. and is usually sold by them with *Colchicums*, for Autumnal Ornaments to Gardens; for which Purpose this is a pretty Plant, as it will frequently keep flowering from the Middle of September to the Middle of November, provided the Frost is not so severe as to destroy the Flowers; for although there is but one Flower in each Cover, yet there is a Succession of Flowers from the same Root, especially when they are suffered to remain three or four Years unremoved. The Flowers seldom rise above three or four Inches high; it is shaped somewhat like the Flowers of the large yellow Crocus; these have their green Leaves come up at the same Time, like the Saffron, and after the Flowers are past, the Leaves increase all the Winter. The Roots are bulbous, and shaped like those of the Narcissus, so are proper Ornaments for such Borders as are planted with Cyclamens, Saffron, Autumnal Crocus, Colchicums, and such low Autumnal Flowers.

The 10th Sort is more rare in England than any of the other, at present. It was formerly in several curious Gardens, but as it flowers at a Season when there are so many finer Sorts in Beauty; so it was neglected and cast out of the Gardens, whereby it is almost lost in England: It grows naturally in Spain and Portugal, where it flowers early in January. This is as hardy as

the 1st Sort, and may be planted in the open Borders, and treated in the same manner as the 1st, excepting that this will not lose its Leaves so soon, so should not be taken out of the Ground to transplant, till the End of July, or Beginning of August. It flowers in April or the Beginning of May, but is not of long Duration.

The 2d Sort is a Native of Virginia and Carolina, in which Countries it grows very plentifully in the Fields and Woods, where its Flowers make a beautiful Appearance in the Spring. The Flowers of this Sort are produced single, and at their first Appearance have a fine Carnation Colour on their Outside; but this fades away to a pale, or almost white, before the Flowers decay. This Plant is so hardy, as to thrive in the open Air in England, provided the Roots are planted in a warm Situation, and on a dry Soil; it may be propagated by Offsets from the Roots, which they put out pretty plentifully, especially if they are not transplanted oftener than once in three Years. The Flowers of this Sort are almost as large as those of the small Orange Lily, but do not grow above six or eight Inches high; they appear the latter End of May, or Beginning of June, and sometimes it flowers in August in this Country.

The 3d Sort, which is commonly called *Jacobæa* Lily, is now become pretty common in the curious Gardens in England, the Roots sending forth Plenty of Offsets, especially when they are kept in a moderate Warmth in Winter: for the Roots of this Kind will live in a good Green-house, or may be preserved thro' the Winter under a common hot Bed frame; but then they will not flower so often, nor send out so many Offsets, as when they are placed in a moderate Stove in Winter. This Sort will produce its Flowers two or three times in a Year, and is not regular to any Season; but from March to the Beginning of September, the Flowers will be produced when the Roots are in Vigour. The Stems of these Flowers are produced from the Sides of the Bulbs, so that after the Flowers produced on one Side are decayed, there is another Stalk arises from the other Side of the Bulbs; but there is rarely more than one Flower produced on the same Stalk. These Flowers are large, and of a very deep Red; the under Petals, or Flower Leaves, are very large, and the whole Flower stands nodding on one Side of the Stalk, making a beautiful Appearance. This should be called the *Mexican* Lily, rather than the other, so named by the Gardeners; this being a Native of Mexico, whereas the other is common to all the Islands in the *West-Indies*.

It is propagated by Offsets, which may be taken off every Year; the best time to shift and part these Roots is in August, that they may take good Root before Winter; in doing of this, there should be care taken not to break off the Fibres from their Roots. They should be planted in Pots of a middling Size, filled with light Kitchen Garden Earth; and if they are kept in a moderate Degree of Warmth, they will produce their Flowers in Plenty, and the Roots will make great Increase.

The 6th Sort, which is commonly called the *Mexican* Lily, is not quite so hardy as the former Sort, so must be placed in a warm Stove; and if the Pots are plunged into a hot Bed of Tanners Bark, the Roots will thrive better, and the Flowers will be strong. This Sort is increased by Offsets, as the others of this Tribe; and

and it flowers usually the Beginning of Spring, when it makes a fine Appearance in the Stove; the Flower Stems of this Sort, seldom rise more than one Foot high, each Stem supports two three, or four Flowers, rarely more than that Number. The Flowers are large, and of a bright Copper Colour, inclining to red, the Spatha, or Sheath, which covers the Buds before they open, divides into two Parts to the Bottom, standing on each Side the Umbel of Flowers, joined to the small Foot Stalks. This doth not produce Seeds in *England*.

The 8th Sort is also tender, and must be treated in the same manner as the 6th; this is more common in the Gardens in *Holland* than in this Country; and as it is a Plant which increases but slowly, will not be very common here. This flowers usually in *June* and *July*; and sometimes the same Root will flower again in *Autumn*; for if the Pots are plunged in a Bed of Tanners Bark, the Roots generally flower twice every Year, but the Flowers are not of long Duration. This Sort grows naturally in the *West-Indies*, from whence I have received the Roots and Seeds.

The 7th and 9th Sorts are more hardy, and may be treated in the same manner as the *Jacobaea* Lily; these will increase pretty fast by Offsets, when properly managed, especially the 9th, which sends out many Offsets, so as to fill the Pots with Roots, but it seldom flowers in *England*. The Leaves of this are long and narrow, not much unlike those of the *Snow-drop*. The Petals of the Flower turn back like those of the *Guernsey* Lily, but are of a lighter Colour, rather inclining to Scarlet; the Roots are small. The 7th Sort usually flowers in *Winter*, if the Pots are placed in a moderate Stove; and as at that Season there are few Flowers in the open Air, so these are the more valuable.

I received Roots of both these Sorts from the *Cape of Good Hope*, which have succeeded in the *Chelsea* Garden. The 7th Sort produces a great Number of Flowers in each Umbel, of a deep purple Colour, but the Stalk which supports them, rarely rises more than three Inches high; these Flowers appear in *December*. The Roots are very large, and the Leaves very long, but narrow.

The 11th Sort is figured by *Ferrarius* in his Garden of Flowers, as also by *Morrison* in his History of Plants; but Dr. *Heister* has separated this from the Genus, and has constituted a new Genus by the Title of *Brunswigia*, in honour to the Duke of *Brunswick*. But although the Shape of the Flowers in this Plant are different from most of the others of this Genus, yet as there is a Uniformity in the characteristic Notes of the Genus, so it should not be separated; for the *Jacobaea* Lily differs in the Form of its Flowers, from the other Species, full as much as this, therefore might for the same reason be separated from this Genus.

This grows naturally at the *Cape of good Hope*, from whence I received the Roots, which have succeeded in the *Chelsea* Garden. The Bulbs are large and almost round; the Leaves long, broad, and rounded at their Extremities; these spread two Ways on the Surface of the Ground; and come up after the Flower Stem appears, which is generally in *November*; after the Flowers are past, the Leaves increase till Spring, and in *May* they begin to decay, so that from the Middle of *June* to *October*, the Roots are entirely naked of Leaves.

The 12th Sort is also a Native of *Africa*, I received the Roots of this from the *Cape of Good Hope* with the former. This produces its Flowers in *February* and *March*. The Stems rise near two Feet high, and have commonly but three Flowers inclosed in each Sheath, or Cover. The Flowers are as large as those of the *Belladonna* Lily, and are of the same Form growing erect, but of a deeper red Colour; the Leaves are long and narrow, and have a hollow Furrow on their upper Side, where there is a pale Stripe running the Length of the Leaves, and are very like those of the *American Pancratium*. These Leaves decay in Summer, as those of the former, and appear again at the same Season.

Both these Sorts may be treated in the same manner, as hath been directed for the *Jacobaea* Lily, with this Difference only, of placing these in *Winter* in a Stove, where there is a moderate Share of Warmth, for the Roots of these will not endure so much cold as those, nor should they have so much Water given them.

The best Time to transplant these Roots is about the Beginning of *August*, when their Leaves are quite decayed, and before they put out new Fibres, for it will be very improper to remove them afterwards.

All these bulbous-rooted Flowers delight in a loose sandy Earth, mixed with good Kitchen Garden Mould; and require but little Water when their Leaves decay, and the Roots are not in a growing State; for much Moisture at that time will often cause them to rot; but when they are growing, and putting out their Flower Stems, they should be frequently refreshed with Water, but not given in too great Quantities at a time. The Pots, with the tender Sorts, should constantly be kept in the Stove; and in Summer they should have as much free Air as possible; for although some of these Sorts may be kept abroad in Summer, yet they do not thrive so well, nor flower so constantly, as those which are treated in the manner here described.

The 5th Sort, which is called the *Belladonna* Lily, was brought to *England* from *Portugal*, where the Gardens did some Years ago abound with these Flowers; for the Roots increase very fast, especially in such Countries where they live in the open Air. The Gardens in *Italy* have also great Quantities of these Flowers, especially about *Florence*; where, at the Season of their flowering, they are commonly sold in the Markets to adorn their Rooms; the *Italians* call it *Narcissus Belladonna*. This Plant thrives so well in *Italy*, as to need no other Culture than the common Lily; and although it does not flower untill *August*, yet it commonly produces good Seeds in that Country, from which they propagate them in great Plenty; but with us they require more Care, otherwise they cannot be preserved. The Roots of this Sort were generally planted in Pots, and placed under a hot Bed Frame, to screen them from the Frost in *Winter*; for as their green Leaves come out in *Autumn*, and continue growing all the *Winter*, so when they are exposed to the Frost, whereby their Leaves are killed, the Roots will be in Danger of perishing, but if they should survive, they will be greatly weakened by it. With this Culture the Roots were preserved, but they did not constantly flower, nor increase in Offsets very fast, so that few Gardens were furnished with this Plant; and of late Years the Roots have

have been very scarce in *Portugal*, for the *Jacobæa* Lily having been introduced into that Country, has supplanted the other, in most of their Gardens, so that the Roots which have been brought from thence of late Years for the *Belladonna* Lily, have proved the *Jacobæa* Lily.

The method in which I have cultivated this Plant for some Years past, with great Success, is as follows. I prepared a Border next a South West aspected Wall, of about six Feet wide, in the following Manner, *viz.* I removed all the Earth to the Depth of three Feet, then I put some very rotten Dung in the Bottom, six Inches thick, upon which I laid light Garden Mould about twenty Inches deep; after making this level, I placed the Roots at six Inches Distance every Way, and then covered them over with light sandy Earth, to the Height of the Border, whereby the upper Part of the Roots were five or six Inches buried, and in the Winter I covered the Border all over with rotten Tanners Bark, three Inches deep, to prevent the Frosts from penetrating the Ground; and when the Frost was very severe, I laid some Mats or Straw over the Leaves to protect them from being killed. With this Management the Roots have greatly increased, and have constantly flowered every Year; some of them have put out two or three Stems, which grew near three Feet high, and produced many Flowers in each Umbel, which have made a fine Appearance during the Month of *October*. This Plant produces its Flowers in *October*, and the green Leaves come up soon after, and abide all the Winter and Spring until *June*, at which Time they decay; soon after which the Roots should be transplanted, for if they are let stand till *July*, they will have sent forth new Fibres, when it will greatly injure the Roots, if they are disturbed. If some of these Roots are planted in a warm Border, close to a South Wall, and on a dry Soil, they will thrive very well, especially if they are covered in severe Frost; and these Roots will flower much stronger than those which are kept in Pots, and will multiply faster.

The 4th Sort is supposed to come originally from *Japan*, but has been many Years cultivated in the Gardens of *Guernsey* and *Jersey*; in both which Places, they seem to thrive as well as in their native Country; from those Islands their Roots are sent annually to the Curious in most Parts of *Europe*, and are commonly called *Guernsey* Lilies. The Roots of this Plant are generally brought over in *July* or *August*; but the sooner they are taken out of the Ground after their Leaves decay, they are the better: For although the Roots which are taken up when their Flower Stems begin to appear, will flower, yet their Flowers will not be so large, nor will their Roots be near so good after, as those which were removed before they had sent out fresh Fibres.

When these Roots come over, they should be planted in Pots filled with fresh light sandy Earth, mixed with a little very rotten Dung, and placed in a warm Situation, observing now and then to refresh the Earth with Water; But by no Means let them have too much Wet, which would rot their Roots, especially before they come up. About the Middle or End of *September*, such of the Roots as are strong enough to flower, will begin to shew the Bud of their Flower Stem (which is commonly of a red Colour); therefore you should remove those Pots into a Situation where they may have

the full Benefit of the Sun, and may be sheltered from strong Winds: but by no Means place them too near a Wall, nor under Glasses, which would draw them up weak, and render them less beautiful. At this Season they should be gently refreshed with Water, if the Weather be warm and dry; but if it should prove very wet, they should be screened from it.

When the Flowers begin to open, the Pots should be removed under shelter, to prevent the Flowers from being injured by too much Wet: But they must not be kept too close, nor placed in a Situation too warm, which would occasion their Colours to be less lively, and hasten their Decay. The Flowers of this Plant will continue in Beauty (if rightly managed) a full Month: and though they have no Scent, yet, for the Richness of their Colour, they are justly esteemed in the first Rank of the flowery Race.

After the Flowers are decayed, the green Leaves will begin to shoot forth in Length, and if sheltered from severe Cold will continue growing all the Winter; but they must have as much free Air as possible in mild Weather and be covered only in great Rains or Frosts; for which Purpose a common hot Bed Frame is the properest Shelter for them; under which if they are placed, the Glasses may be taken off constantly every Day in dry open Weather, which will encourage the Leaves to grow strong and broad; whereas when they are placed in a Green-house, or not exposed to the open Air, they will grow long and slender, and have a pale weak Aspect, whereby the Roots will become weak, so that it seldom happens that they produce Flowers under such Management.

These Roots should be transplanted every fourth or fifth Year toward the latter End of *June*, or beginning of *July*, and planted into fresh Earth (but they should not be oftener removed, for that would retard their flowering). The Offsets should also be taken off, and planted into several Pots, which in three Years Time, will produce Flowers; so that after a Person is once stocked with these Roots, they may increase them, so as to have a Supply of blowing Roots, without being at the Trouble or Expence of sending to *Guernsey* every Year for fresh Roots; and the Roots preserved here will flower stronger than those which are usually brought from thence, for the Inhabitants of those Islands are not very curious in cultivating these Roots: Their usual Method is to plant them at a great Distance in a Bed of common Earth, where they let them remain for many Years: In which Time they produce such a Number of Offsets, that many Times one single Cluster has contained above a hundred Roots; by which Means, those which grow on the Inside are so much compressed by the outer Roots, that they are perfectly flatted; and from the Number of Roots growing in each Cluster, they are all rendered weak, and unfit to produce such large Stems of Flowers, as those which have grown single, and are of a spherical Figure.

But when a Person is possessed of a large Number of these Roots, it will be troublesome to preserve them in Pots, therefore there should be a Bed prepared of the following Earth, in some well sheltered Part of the Garden, *viz.* Take a third Part of fresh Virgin Earth from a Pasture Ground, which is light, then put near an equal

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Part of Sea Sand, to which you should add rotten Dung, and sifted Lime Rubbish, of each an equal Quantity. With this Earth (when well mixed and incorporated) you should make your Bed about two Feet thick, raising it about four or five Inches above the Surface of the Ground, if the Situation be dry; but if the Ground be wet, it should be raised eight or nine Inches higher. In this Bed, about the Beginning of July, plant the Roots about six or eight Inches asunder each Way; and in Winter, when the Frost begins, you should either cover the Bed with a Frame, or arch it over, and cover it with Mats and Straw, to prevent their Leaves from being pinched with Cold; but in Spring the Covering may be entirely removed, and the Bed kept constantly clear from Weeds, during the Summer, observing to stir the Surface of the Earth now and then; every Year, when the Leaves are decayed, you should sift a little fresh Earth over the Beds, to encourage the Roots. In this Bed the Roots may remain until they are strong enough to produce Flowers, when they may be taken up and planted in Pots, as was before directed, or suffered to remain in the same Bed to flower.

The Roots of these Plants do not flower again the succeeding Year (as in many other Sorts of Bulbs); but if their Bulbs contain two Buds in their Center, as is often the Case, they often flower twice within the Compass of three Years; after which, the same Root does not flower again in several Years, only the Offsets from it.

AMBROSIA.

The Characters are,

It hath male and female Flowers on the same Plant. The male Flowers are composed of many Florets, which are included in one common Empalement of one Leaf, which is plain and extended the Length of the Florets: Each Floret is of one Leaf, Funnel-shaped and cut into five Parts at the Brim; in the Center is situated the five small Stamina, which are crowned with pointed erect Summits. The female Flowers are placed under the male in the same Spike, these have an Empalement of one Leaf, which is pointed and permanent: They have no Petals, but an oval Germen placed in the Bottom of the Empalement, supporting a slender Style, crowned with two long hairy Stigma. The Germen afterward becomes an oval hard Capsule with one Cell, crowned with the acute Segments of the Empalement, and inclosing one roundish Seed.

The Species are,

1. *AMBROSIA foliis multifidis racemis solitariis pilosis.* L. S. P. Ambrosia with Leaves divided into many Parts, and single hairy Spikes of Flowers. Sea Ambrosia.

2. *AMBROSIA foliis bipinnatifidis, racemis paniculatis terminalibus glabris.* Hort. Upsal. 214. Ambrosia with double winged Leaves, a smooth loose Spike of Flowers growing at the extremity of the Branches. Tall unfavoury Sea Ambrosia with Mugwort Leaves.

3. *AMBROSIA foliis trilobis & quinquelobis serratis.* Ambrosia with Leaves having three and five Lobes, which are sawed on their Edges. Largest Virginian Ambrosia, with an Eastern Plane Tree Leaf.

4. *AMBROSIA foliis bipinnatifidis primoribus ramulorum indivisis integerrimis.* L. S. P. Ambrosia with double winged Leaves, and the younger Branches having entire Leaves. Greatest unfavoury Ambrosia of Virginia with Water Horehound Leaves, which are finely divided.

5. *AMBROSIA foliis pinnatifidis hirsutis racemis solitariis terminalibus, caule fruticoso perenne i. e.* Ambrosia with hairy winged Leaves, single Spikes of Flowers, growing at the Extremity of the Branches, and a shrub by perennial Stalk.

The 1st Sort grows naturally in the East, near the Sea Shore; this rises about two Feet and a Half high, sending out many Side Branches, which are garnished with Leaves divided into many Parts, and upon being handled emit a strong Odour. The Spikes of Flowers are produced from the Wings of the Stalks, which are long, single, and hairy; the upper Part being furnished with many male Flowers, and the lower Part with female Flowers; these grow close to the Stalk. After the Flowers are past, the female Flowers are succeeded by hard leafy Capsules having one Cell, in which is included a single round Seed. This is an annual Plant, which seldom perfects its Seeds in England, unless the Plants are brought forward in the Spring; therefore the Seeds should be sown in the Autumn in a warm Border, and when the Plants come up in the Spring, they should be transplanted into another warm Border of poor Ground; for when these Plants are put into a rich moist Land, they grow very luxuriantly, so do not flower till late in the Season, and seldom perfect their Seeds. Therefore the best Method to obtain good Seeds, is to plant some of the Plants in Lime Rubbish to prevent their luxuriant Growth, which will cause them to flower early, whereby good Seeds may be produced.

If the Seeds are permitted to scatter, the Plants will come up the following Spring without Care; for when the Seeds are sown in the Spring, the Plants seldom come up the same Year, but the Seeds will remain in the Ground a Year before they vegetate. There is not much Beauty in this Plant, so it is not often admitted to a Place in Gardens, except where a Variety are preserved.

The 2d Sort grows naturally in the Islands of America; as also in Carolina and Virginia; from the two latter Countries I have frequently received the Seeds, and in the Tubs of Earth which came with Plants from the former, this Plant hath come up in Plenty, so is undoubtedly a common Weed there. This Sort grows more than three Feet high, dividing into many Branches; these are garnished with winged Leaves in Shape like those of Mugwort, which are without Odour; at the Extremity of each Branch, the loose Spikes of Flowers are produced, composed of one long Spike in the Middle, and three or four short lateral Spikes: These are smooth, and have male and female Flowers ranged in the same Manner as the former; the female Flowers are succeeded by Seeds of the same Shape.

This Sort will come up and thrive in the open Air in England, but the Plants so raised will not produce good Seeds, unless the Season is warm; therefore to obtain them every Year, it is necessary to cultivate them in the following Manner.

The Seeds should be sown on a moderate hot Bed in March, and when the Plants are come up two Inches high, they must be transplanted into another moderate hot Bed, allowing each Plant three or four Inches square; observing to water them pretty well, and shade them until they have taken new Root; afterward they must have a large Share of fresh Air every Day, when the Weather

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Weather is warm, and frequent Waterings, for they are very thirsty Plants. When the Plants are grown pretty strong, they must be taken up with Balls of Earth to their Roots, and planted in large Pots filled with rich light Earth; and if they are placed on a very moderate hot Bed until they are well rooted, it will greatly forward their flowering. Toward the latter End of May they should be placed abroad with other hardy annuals, among which they make a Variety. These Plants flower in July, and their Seeds ripen in September.

The 3d Sort is a Native of North America, where it is a very common Weed. This often grows eight or ten Feet high; and if it is planted in a rich moist Soil, or is often watered, it will grow much higher, and spread out into many Branches. The Seeds of this Plant, when sown in the Spring, seldom come up the first Year, but frequently remain in the Ground until the following Spring; so that when the Plants do not come up, the Ground must not be disturbed till after the Spring following, to wait for the Plants coming up. When the Plants come up, some of them may be transplanted into a moist rich Soil, allowing them at least four or five Feet Room every Way; they should be shaded until they have taken new Root; and if they are frequently watered in dry Weather, they will grow to a large Size; but their Branches must be supported by Stakes, otherwise they are very subject to break with strong Winds. The Flowers of this Plant are not more conspicuous than those of the Hemp, to which these are near akin; therefore are only preserved by such Persons as are curious in Botany, for the Sake of Variety. If the Seeds are suffered to scatter, the Plants will come up the following Spring, provided the Ground is not disturbed; and if sown in Autumn, the Plants will come up the following Spring, and may be treated as above.

The 4th Sort grows naturally in North America, from whence I have frequently received the Seeds. This divides into many Branches, the lower Part of which are garnished with whole Leaves, but the upper Part hath compound Leaves resembling those of the second Sort; the Spikes of Flowers are produced from the Wings of the Stalks, in which this differs from the second. This may be treated in the same Manner as the 2d Sort.

The 5th Sort is a Native of Peru, from whence the younger Jussieu sent the Seeds to the Royal Garden at Paris: it has succeeded in the Chelsea Garden, where it annually perfects its Seeds.

This Sort grows to the Height of ten or twelve Feet, with a woody Stem, dividing into several Branches; these are garnished with hairy Leaves, composed of several winged Lobes, and are placed alternately upon the Branches; the Spikes of Flowers are single, hairy, and are produced at the Extremity of the Branches. The female Flowers (which are situated below the male, on the same Spikes) grow in small Clusters, at separate Distances, each having two long narrow Segments of the Empalement, which rise above the Seed Vessel.

This is a perennial Plant, and may be propagated by Cuttings or Seeds; if by the former, they should be planted in a shady Border, in any of the Summer Months; these will require to be frequently watered. In a Month or five Weeks they will have good Roots, therefore they should be taken up and potted; for when

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they are left longer in the full Ground, they will grow very luxuriant, so will not so soon recover their Removal, as those which are transplanted earlier. These Plants are hardy, so may be exposed to the open Air in Summer; and in the Winter, if sheltered in a common Green-house, with Myrtles and other hardy exotic Plants, they will live several Years. In mild Winters, the Roots of this Plant have lived in the full Ground in a warm Border, without any Covering.

The Seeds of this Sort seldom come up the same Year when sown in Spring, but those which have fallen, or been sown in the Autumn, have grown the following Year.

AMELANCHIER. See Chionanthus.

AMETHYSTEA. Lin. Gen. 32. Amethyst.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is Bell-shaped, angular and cut into five equal pointed Segments at the Brim; the Flower is of one Leaf, of the Lip Kind, and divided into five unequal Parts at the Top; the upper Lip is erect, roundish, concave, and cut into two; the lower Lip is cut into three Parts, the middle Segment being concave and of the same Length with the upper Lip, but the two Side Segments are shorter and erect. The Flower hath two slender Stamina, which stand under the upper Lip, but are longer; these are crowned with roundish Summits. In the Center is situated a quadrifid Germen, supporting a single Style, crowned with two acute Stygma: After the Flower is past, the Germen becomes four naked Seeds, shut up in the Empalement.

We know but one Species of this Genus, viz.

AMETHYSTEA. Hor. Up. This is the *Ametysyllina montana erecta foliis exiguis digitatis trifidis serratis, flosculis cum comâ cæruleo-janthinis*. Amman. Ruth. 4. i. e. Mountain upright Amethyst, with small trifid sawed Leaves, and the Heads and Flowers of a Jacinth Blue.

This Plant is a Native of the Mountains in Siberia, from whence the Seeds were sent to the Imperial Garden at Petersburg, Part of which were sent me by the late Dr. Animan, and they grew in the Chelsea Garden, where the Plants annually produce Seeds.

It is an annual Plant with an upright, Stalk, which rises about a Foot high, and toward the Top puts out two or three small lateral Branches; these are garnished with small trifid Leaves, sawed on their Edges, and of a very dark green Colour; at the Extremity of the Branches, the Flowers are produced in small Umbels; these are of a fine blue Colour, as are also the upper Part of the Branches, and the Leaves immediately under the Umbel; so that although the Flowers are small, yet from their Colour, with those of the upper Part of the Stalks, the Plants make a pretty Appearance. If the Seeds of this Plant are sown in Autumn, or are permitted to scatter, the Plants will come up early the following Spring, and these will flower the Beginning of June; but those which are sown in the Spring, will not flower till July; and in dry Seasons, the Seeds will remain in the Ground a whole Year, so that the best Time for sowing them is in Autumn.

When the Plants come up, they require no Care but to keep them clean from Weeds, and where too close to thin them, for they do not thrive when transplanted, therefore the Seeds should be sown where they are to remain.

AMMANNIA. Houst. N. G. Lin. G. P. 144.

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The Characters are,

It hath a Bell-shaped oblong erect Empalement, having four Angles, and divided at the Brim into eight slender Parts; this is permanent. The Flower hath no Petals, but four slender Stamina which are as long as the Empalement in which they are inserted. These are crowned with double Summits. In the Center is situated a large round Germen, supporting a short Style crowned with a Stigma; the Empalement afterward becomes a round Capsule with four Cells, which are filled with small Seeds.

The Species are,

1. AMMANIA foliis semiamplexicaulibus, caule tetragono. Hort. Cliff. 344. i. e. Ammania with a square Stalk, and Leaves embracing it half round.

2. AMMANIA foliis subpetiolatis caule ramosa. Lin. Sp. Plant. 120. i. e. Ammania with Leaves having short Foot Stalks and a branching Stalk.

3. AMMANIA foliis subpetiolatis capsulis calyce majoribus coloratis. Lin. Sp. Plant. 120. i. e. Ammania whose Leaves have short Foot Stalks, and a coloured Seed Vessel larger than the Flower Cup.

The 1st grows naturally in moist Places in Jamaica.

It grows about a Foot high, with an upright square Stalk, and long narrow Leaves set in Form of a Triangle, whose Base half furrounds it; these grow the whole Length of the Stem. They are of a pale Green, and of the Consistence of those of Purslane; the Stalks are also succulent, and of the same Colour with those of that Plant. The Flowers come out in Whorles round the Stalks, at the Joints where the Leaves adhere, in Clusters: These have no Petals, so make no great Appearance, and are soon succeeded by round Seed Vessels, which are full of small Seeds.

These Plants must be raised on a hot Bed in the Spring, and afterward removed to another hot Bed to bring them forward; when they have acquired Strength, they should be transplanted into Pots filled with rich light Earth, and placed under a Frame, observing to shade them till they have taken fresh Root; then they should be placed in a Glass Case or Stove to ripen their Seeds, for the Plants are too tender to thrive in the open Air here, unless the Summer proves very warm.

The 2d Sort grows naturally in Virginia and Carolina; this is an annual Plant, which rises about a Foot high, with red succulent Stalks, putting out Side Branches, which grow opposite: The Flowers are produced single from the Wings on the lower Part of the Branches, but toward the Top they are in Clusters. These have no Beauty, so are only preserved in Botanic Gardens for the Sake of Variety. This Sort will perfect its Seeds in the open Air, if the Plants are raised on a hot Bed in the Spring, and planted in a warm Border.

The 3d Sort grows naturally in China; this is a very low Plant, seldom rising more than three Inches high; the Leaves are placed opposite on the Branches, and the Flowers grow in Whorles, from the Wings of the Stalk. As this Plant has little Beauty, so it is rarely preserved in Gardens. If raised on a hot Bed in Spring, and treated in the same Manner as the 1st Sort, the Seeds will ripen in England.

AMMI. Bishops-weed.

The Characters are,

It is an umbelliferous Plant; the great Umbel is composed

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of many smaller, which are disposed like Rays. The Flowers are difform, each having five Petals, which are Heart-shaped. The Germen becomes a small round striated Fruit, composed of two Seeds, which are plain within and convex on their Outside.

The Species are,

1. AMMI foliis inferioribus pinnatis lanceolatis serratis, superioribus multifidis linearibus. Hort. Up. Bishops-weed with under Leaves, which are winged, Spear-shaped, and sawed, and the upper Leaves are divided into many narrow Segments. Ammi majus. Common Bishops-weed.

2. AMMI foliorum omnium lacinulis lanceolatis. Guett. 2. p. 433. i. e. Bishops-weed with all its Leaves cut in Shape of a Spear.

The 1st Sort is annual; and is propagated by Seeds, which should be sown in Autumn, in the Place where it is to remain; and in the Spring, the Ground should be hoed to cut up the Weeds, and also to thin the Plants, in the same Manner as is practised for Carrots, leaving them four or five Inches asunder; or if the Ground is good where they grow, they must be left at least six Inches, for they will grow large and cover the Ground; after this they require no farther Care, but to keep them clean from Weeds. In June they will flower, and their Seeds ripen in August, which should be gathered as it ripens, otherwise it will soon scatter. These Seeds are used in Medicine, so may be had in Plenty with this Management; for it will grow in any open Situation, but thrives best on light sandy Land. When the Seeds are sown in Spring, they seldom come up the same Year, and if they should, they produce but few Seeds.

The 2d Sort is a perennial Plant, which is preserved in Botanic Gardens for Variety, but having little Beauty, is rarely admitted into other Gardens. It may be propagated by Seeds, which should be sown in Autumn. It will grow in any open Situation, is very hardy, and thrives best on a moist Soil.

AMMI PERENNE. See Sium.

AMOMUM. Lin. Gen. Plant. 2. Zinziber. Ginger.

The Characters are,

The Flowers are collected in a scaly Spike, each having a double (Spatha) or Sheath; the outer Sheath loosely covers the Scale, and the inner encompasses the Tube of the Flower, with the Parts of Generation; the Flower is of one Leaf, tubulous below, but divided into three Parts at the Brim, the middle Segment being longer and broader than the others. In the Bosom of the Flower is situated an oblong thick Nectarium. From the Tube of the Flower arises two slender Stamina, which are crowned with thick short Summits. Under the Receptacle of the Flower is placed the round Germen supporting a single Style, which is as long as the Tube of the Flower, and crowned with a hairy Stigma. The Germen afterward becomes an oval three cornered Seed Vessel, opening in three Parts, containing several Seeds.

The Species are,

1. AMOMUM scapo nudo spica ovata. Hort. Cliff. 3. i. e. Amomum with a naked Stalk and oval Spike of Flowers. This is the Zinziber. C. B. P. 35. Ginger.

2. AMOMUM scapo nudo spica oblonga obtusa. Hort. Cliff. 3. i. e. Amomum with a naked Stalk and an oblong blunt Flower Spike. Broad leaved wild Ginger, called Zerumbet.

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3. AMO-

3. *AMOMUM scapo bracteis alternis laxis, caule foliorum altissimo. i. e. Amomum* with Flower Stalks loosely branching alternately, and very tall Leaf Stalks.

The 1st, which is the common Ginger, is cultivated for Sale in most of the Islands of *America*, but is a Native of the *East-Indies*, and also of some Parts of the *West-Indies*, where it is found growing naturally without Culture. The dried Roots of this Sort furnish a considerable Export from the *British Colonies in America*. These Roots are of great Use in the Kitchen, as also in Medicine; and the green Roots preserved as a Sweetmeat are preferable to every other Sort.

The Roots of this Sort are jointed, and spread in the Ground; these put out many green Reed-like Stalks in the Spring, which rise to the Height of two Feet and a Half; these are garnished with long narrow Leaves, placed alternately all their Length, and closely embrace the Stalks at their Base. The Flower Stems afterwards arise by the Side of these, immediately from the Root; these are naked, ending with an oblong scaly Spike, from each of these Scales is produced a single blue Flower, whose Petals are but little longer than the squamose Covering. These Flowers appear in September, and in about a Month after the Stalks entirely decay, so that the Roots remain inactive three or four Months.

The 2d Sort grows naturally in *India*; the Roots are much larger than those of the 1st, but are jointed in the same Manner. The Stalks grow from three to near four Feet high; these are garnished with oblong Leaves, placed alternately, and embrace the Stalks at their Base. The Flower Stems arise immediately from the Root, and are terminated by oblong blunt scaly Heads; out of each Scale is produced a single white Flower, whose Petals extend a considerable Length beyond their scaly Covering. These appear in September; and in November all the Stalks perish in the same Manner as the Ginger.

The 3d Sort hath thick fleshy Roots, resembling those of the large flag *Iris*, in the Spring these send forth many green Reed-like Stalks, which rise to the Height of eight or nine Feet, these are garnished with very long narrow Leaves, set alternately the whole Length of the Stalks, and closely embrace them at their Base. These Stalks decay intirely in Autumn, and new arise from the Roots in the Spring, but it hath not produced any Flowers as yet in *England*, though the Roots thrive and increase greatly, where they are properly managed.

All these Sorts are tender, and require a warm Stove to preserve them. They are easily propagated by parting their Roots; the best Time for doing this is in Spring, before they put out new Shoots, for they should not be transplanted in Summer when they are in full Vigour, nor do they succeed so well when they are removed in Autumn, because they remain long after in an inactive State, and during that Time, if Wet comes to the Roots, it often causes them to rot. When the Roots are parted, they should not be divided into small Pieces, especially if they are designed to have Flowers, for until the Roots have spread to the Side of the Pots, they rarely put out Flower Stems, for which Reason they should not be planted in very large Pots.

These Plants thrive best in a light rich Kitchen Garden Earth; with this the Pots should be filled within two Inches of the Top, then the Roots, should be

placed in the Middle of the Pots, observing that their Crowns are upwards, and the Pots filled up with the same rich Earth; after this they should be plunged into a hot Bed of Tanners Bark, and must be sparingly watered, until their Stalks appear above Ground, when they will require a greater share of Moisture, especially during the warm Summer Months; but in Autumn the Waterings must not be often, nor in great Plenty; and during the Winter Season, when the Roots are inactive, very little Water should be given them. The Pots with these Roots should constantly remain plunged in the Tan Bed, for if they are taken out and placed on Shelves in the Stove, their Fibres frequently shrink, which often occasions the Roots to decay.

With this Management all these Sorts have multiplied greatly with me, and the common Ginger has produced Roots which have weighed five or six Ounces, but the others have been near a Pound Weight.

AMOMUM PLINIL. See Solanum.

AMORIS POMUM. See Lycopersicon.

AMORPHA. Lin. Gen. Plant. 768. Bastard Indigo.

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, which is tubulous, cylindrical, and cut into five small obtuse Parts at the Brim. The Flower is of the Butterfly Kind, the upper Petal, or Standard, is small, concave, and erect; this is inserted between the two upper Segments of the Emplacement. It hath ten Stamina, these are joined at their Base, are of unequal Lengths, and crowned with Summits; in the Center is situated a roundish Germen, supporting an Awl-shaped Style, which is the Length of the Stamina, and crowned with a single Stigma; the Germen afterwards becomes a reflexed Moon-shaped Pod, having one Cell, in which are lodged two Kidney-shaped Seeds.

We know but one Species of this Genus, viz.

AMORPHA. H. C. Bastard Indigo. This is the *Barbajovis Americana pseudoacacia foliis flosculis purpureis minimis*. Cat. Hort. or the American Jupiter's Beard with Bastard *Acacia* Leaves, and small purple Flowers.

This Shrub grows naturally in *Carolina*, where formerly the Inhabitants made a coarse Sort of Indigo from the young Shoots, which occasioned their giving it the Title of Bastard Indigo.

It rises with many irregular Stems, to the Height of twelve or fourteen Feet; these are garnished with very long winged Leaves, in Shape like those of the common *Acacia*. At the Extremity of the same Year's shoots, the Flowers are produced in long slender Spikes, which are very small, and of a deep purple Colour, the Stamina stand out beyond the Petals, and are crowned with yellow Summits; after the Flowers are past, the Germen turns to a short Pod, having two Kidney-shaped Seeds, but these do not ripen in *England*.

The Seeds of this Plant were sent to *England* from *Carolina*, by Mr. Catesby, in 1724, from which many Plants were raised in the Gardens near *London*; these were of quick Growth, and many of the Plants produced Flowers in three Years. At present it is become very common in all the Gardens and Nurseries, where it is propagated as a flowering Shrub. It is generally propagated by Seeds, which are annually sent from *America*, for it is found in many of the northern Colonies there;

there; it may also be propagated by laying down the young Branches, which in one Year will make good Roots, and may then be taken off and planted, either in the Nursery, or the Places where they are designed to remain. If they are put into a Nursery, they should not remain there more than one Year; for as the Plants make large Shoots, they do not remove well when they have remained long in a Place. The Plants must have a sheltered situation, otherwise their Branches will be broken by the Winds. As these Shoots are large and soft, their upper Parts are generally killed by Frost in Winter; but they put out Shoots again in Plenty below the dead Part, the Spring following.

AMYGDALUS. L. G. P. The Almond Tree.

The Characters are,

It hath a tubulous Empalement of one Leaf, which is cut at the Brim into five obtuse Segments, the Flower hath five oval obtuse concave Petals, which are inserted in the Empalement; in the Center of the Flower is situated a roundish hairy Germen, supporting a single Style the Length of the Stamina, which is crowned by a round Stigma; this is attended by a great Number of slender erect Stamina, which in many Species are not so long as the Petals of the Flower, these are crowned with slender Summits. After the Flower is past, the Germen becomes an oval compressed large Fruit, with a thin tough hairy Covering having a longitudinal Furrow, this opens, and falls away, leaving an oval compressed Nut, which is furrowed and netted, inclosing a single Seed of the same form.

The Species are,

1. AMYGDALUS foliis petiolatis serratis petalis florum emarginatis. Almond Tree with sawed Leaves, having Foot Stalks, and the Petals of the Flower indented. Common manured Almond Tree.

2. AMYGDALUS foliis petiolatis marginibus crenatis, corollis calyce vix longioribus. Almond Tree with crenated Leaves, having Foot Stalks, and the Petals of the Flowers no longer than the Empalement. The tender-shelled Almond, commonly called Jordan Almond.

3. AMYGDALUS foliis linearilanceolatis acuminatis, marginibus crenatis. Almond Tree with pointed narrow Spear-shaped Leaves, crenated on their Edges. White flowering Almond.

4. AMYGDALUS foliis lanceolatis integerrimis, argenteis perennantibus petiole brevioris. i. e. Almond Tree with Spear-shaped silvery Leaves, which are entire, and continue all Winter, and very short Foot Stalks.

5. AMYGDALUS foliis petiolatis serratis basi attenuatis. Almond with sawed Leaves, which are narrowed at the Foot Stalk. Dwarf Almond with single Flowers.

The 1st is the common Almond, which is cultivated more for the Beauty of its Flowers, than for its Fruit. There are two Varieties of this, one with sweet, and the other bitter Kernels, which arise from the Fruit of the same Tree.

The 2d Sort is commonly known by the Title of Jordan Almonds, the Nuts of this Kind are frequently brought to England. These have a tender Shell, and a large sweet Kernel. The Leaves are broader, shorter, and grow much closer than those of the common Sort, and their Edges crenated. The Flowers are very small, and of a pale Colour, inclining to white. I have several Times raised these Trees from the Almonds which came

from abroad, and always found the Plants to maintain their Difference from the common Almond.

The 3d Sort hath narrow sharp-pointed Leaves, sawed on their Edges; the Flowers are not so large as those of the common Almond, and are white; the Shoots are much smaller, and the Joints closer than the common Sort, nor is the Tree so hardy, therefore should have the Advantage of a warm Situation, otherwise it will not thrive. This Sort flowers early in the Spring, and rarely produces Fruit in England. But from an old Tree which grew against a South-west aspect Wall, I have some Years had the Fruit ripe, and well flavoured, but their Kernels were small.

The 4th Sort was found growing near Aleppo, from whence the Fruit was sent to the Duke D'Ayen in France, who raised several of the Plants in his curious Garden at St. Germain, and was so good as to send me a Share of them, which are flourishing in the Chelsea Garden, where they have endured the open Air for three years, against a Wall without any Covering. The Leaves of this Tree are silvery, and very like those of the Sea Purslane. These continue all the Year, but as it hath not produced any Flowers yet in England, I can give no farther Account of its Difference from the other Sorts.

The 5th Sort is very common in the Nurseries about London, and is usually sold with other flowering Shrubs to adorn Gardens. This Sort seldom rises more than four Feet high, sending out many side Branches. The Roots of this are very subject to put out Suckers, by which it may be increased in Plenty, but if these are not annually taken away, they will starve the old Plants. As these Suckers are very apt to creep at the Root, and put out Suckers again, so those Plants which are propagated by Layers are much preferable. This Shrub flowers in April, at which Time all the young Shoots are covered with Flowers, which are of a Peach Blossom Colour; they make a fine Appearance when intermixed with Shrubs of the same Growth.

The common Almond is cultivated in all the Nurseries, and the Trees are generally planted for the Beauty of its Flowers. These often appear in February, when the Spring is forward, but if Frost comes after, the Flowers are soon destroyed, so that their Beauty is of short Duration, and in those Seasons there are few of the Almonds, whereas, when the Trees do not flower till late in March, they seldom fail to bear Plenty of Fruit, many of which will be very sweet, and fit for the Table when green, but they will not keep long.

They are propagated by inoculating a Bud of these Trees into a Plum, Almond, or Peach Stock, in the Month of July, (the Manner of this Operation see under the Article of Inoculation). The next Spring, when the Buds shoot, you may train them up either for Standards, or suffer them to grow for half Standards, according to your own Fancy; though the usual Method is to bud them to the Height the Stems are intended to be; and the second Year, after budding, they may be removed to the Places where they are to remain. The best Season for transplanting these Trees, if for dry Ground, is in October, as soon as the Leaves begin to decay; but for a wet Soil, February is much preferable; and observe always to bud upon Plum Stocks, for wet Ground; and Almonds or Peaches for dry.

ALMOND, the Dwarf, with double Flowers. See Persica.

ANACAMPSEROS. See Sedum.

ANACARDIUM. The Cashew Nut, or Acajou.

The Characters are,

It hath an Empalement of one Leaf, which is erect, and cut into five acute Segments at the Brim. The Flower is of one Leaf, having a short Tube, and cut into five Parts at the Top, which are reflexed, and are longer than the Empalement; the Flower hath ten slender Stamina, which are as long as the Petals, and are crowned with small Summits. In the Center is placed a round Germen, supporting an Awl-shaped Style, crowned with an acute Stigma. The Germen afterwards becomes a large oval fleshy Fruit, having a large Kidney-shaped Nut growing to its Apex.

We have but one Species of this Genus, viz.

ANACARDIUM Hort. Cliff. 161. the occidental Anacardium. This is the Acajou. Pif. Hist. Bras. 58. The Cashew, or Cajou, by Sir Hans Sloane.

This grows to the Height of 15 Feet or more, in its native Country, which is both Indies, but in England the Plants are with great difficulty preserved; though by their first Shoot from the Seeds, they appear so strong and vigorous, as to promise a much greater Progress than they are ever seen to make.

They are easily raised from the Nuts, which are annually brought from America; each of these should be planted in a small Pot filled with light sandy Earth, and plunged into a good hot Bed of Tanners Bark, giving them no Water till the Plants come up, for the Nuts often rot with Moisture. The Reason for my advising the Nuts to be each put into a separate Pot, is, because the Plants seldom live when transplanted. If the Nuts are fresh, the Plants will come up in about a Month after Planting; and, in a Month more, they will be four or five Inches high, with large Leaves; from this quick Growth, many have been deceived by supposing them hardy, and that they would continue the like Progress, whereas they seldom advance much farther the same Year.

The Plants must be constantly kept in the Stove, for they are too tender to live abroad in England, in the warmest Season of the Year, nor will they thrive in a common Green-house in Summer. As these Plants abound with a milky acrid Juice, they should have but little Water, even in Summer; and in Winter, if they are sparingly watered once a Month, it will be sufficient, for their Roots are tender and soon perish with Moisture.

When they are transplanted, it will be the best Method to break the Pots, for the Roots do not put out many Fibres to hold the Earth about them, so that in shaking them out, most of the Earth will fall from their Roots, and when this happens, the Plants seldom survive; therefore in breaking the Pots Caution must be had not to disturb the Earth more than can be avoided, then the Plant, with the Ball of Earth to its Roots, should be put into a Pot one Size larger than that in which it had before grown, filling up the Pot with light sandy Earth, and plunge the Pot again into the hot Bed. These plants should not be removed oftener than once a Year, nor should they be put into large Pots, for unless their Roots are confined, they will not thrive.

With this Management I have kept these Plants seve-

ral Years, but they are of slow Growth after the first Season, so that I have not raised any of them more than two Feet and a Half high, and it is very rare to see them in England, more than half that Height, tho' I have seen two of them in flower, one in the late Sir Charles Wager's Garden at Parsons-green, and the other in Chelsea Garden.

The pulpy Fruit to whose Apex this Nut grows, is as large as an Orange, and is full of an acid Juice, which is frequently mixed in the making of Punch in America. Many of these Fruit have been brought to England, in Casks of Rum for the same Purpose.

The Nut is of the Size and Shape of a Hare's Kidney, but is much larger at the End which is next the Fruit, than at the other. The outer Shell is of an Ash Colour, and very smooth; under this is another which covers the Kernel, between these there is a thick black inflammable Oil, which is very caustic; this will raise Blisters on the Skin, and has often been very troublesome to those who have incautiously put the Nuts into their Mouths to break the Shell.

The milky Juice of this Tree will stain Linen of a deep Black which cannot be washed out again; but whether this has the same Property with that of the Eastern Anacardium, has not yet been fully experimented, for the inspissated Juice of that Tree is the best Sort of Lac, which is used for staining of Black in China and Japan.

ANACYCLUS. Lin. G. P. Santolinoides.

The Characters are,

It hath compound Flowers, consisting of female and hermaphrodite, included in one common scaly Empalement, the Rays or Borders being formed of the female Flowers, which are tubulous, and stretched out in the Form of a Tongue above the Empalement. The hermaphrodite Flowers which compose the Disk, are Funnel-shaped, Quinqued, and spread open; these have each five slender Stamina, which are crowned with cylindrical Summits; in the Center is placed an oblong compressed Germen, supporting a slender Style crowned with bifid Stigma. The female Flowers have an oblong membranous Germen, supporting a slender Style, crowned with two slender reflexed Stigma; the hermaphrodite Flowers are succeeded by one oblong compressed Seed. The female Flowers are succeeded by a single oblong Seed with broad Borders or Wings, which are indented at the Top; these are placed on a convex Receptacle.

The Species are,

1. ANACYCLUS foliis decompositis linearibus laciniis divisis planis. Hort. Cliff. 417. Anacyclus with narrow decomposed Leaves, whose Divisions are plain. The least Mayweed of Crete with a Chamomile Leaf and a reflexed Head.

2. ANACYCLUS foliis compositis setaceis acutis rectis. H. C. Anacyclus with compound bristly upright pointed Leaves. Eastern Chamomile with pinnated Leaves.

3. ANACYCLUS foliis decompositis linearibus laciniis divisis teretiusculis acutis floribus flosculosis. H. C. Anacyclus with decomposed narrow Leaves, whose Divisions are taper and pointed, and floscular Flowers. Chrysanthemum Valentinum. Corn Marygold of Valentia.

The two 1st Sorts grow naturally in the Islands of the Archipelago, from whence Dr. Tournefort sent their Seeds

Seeds to the Royal Garden at *Paris*. I have also received the Seeds of both these Plants from *Portugal*, so that it may also grow naturally there, as do many of those Plants which were discovered by *Tournefort* in the *Levant*. These are low Plants, whose Branches trail on the Ground. The 1st Sort has fine cut Leaves like those of Chamomile; the Flowers are small, white, and grow single, with their Heads declining; these are like those of the common Mayweed. The 2d hath winged Leaves like those of the Ox-eye; the Flowers are white, and like those of the Chamomile.

The 3d Sort grows naturally in *Spain*. This grows about a Foot high, sending out many Side Branches; the Leaves are finely divided, like those of the Chamomile, and are hairy: the Flowers grow single at the Extremity of the Branches, and are of a bright yellow Colour, with a silvery scaly Empalement. They are as large as those of the Ox-eye.

All these Plants are annual: The Seeds should be sown early in the Spring in a Border of light Earth, where they are designed to remain, and require no other Care but to keep them clean from Weeds, and thin the Plants where they are too close. As these have no great Beauty, so a few Plants only may be left for the Sake of Variety. They flower in *July* and *August*, and their Seeds ripen in *September*.

ANAGALLIS. *Lin. Gen. Plant.* 189. Pimpernel.

The Characters are,

The Flower hath an Empalement which is permanent, and is cut into five sharp Segments which are hollow. The Flower is of one Leaf spread open, and cut into five Parts at the Brim; it hath five erect Stamina which are shorter than the Petals, and are crowned with single Summits. In the Center is placed the globular Germen, supporting a slender inclining Style crowned with a blunt Stigma. The Germen afterwards becomes a globular Vessel with one Cell, opening horizontally, in which are lodged several angular Seeds.

The Species are,

1. ANAGALLIS foliis indivisis caule procumbente, *Lin. Gen. Plant.* 148. Pimpernel with undivided Leaves and a trailing Stalk. Common Pimpernel with a red Flower.

2. ANAGALLIS foliis indivisis glaucis caule procumbente flore caeruleo. Pimpernel with undivided glaucous Leaves, a trailing Stalk, and blue Flower.

3. ANAGALLIS foliis indivisis caule erecto. *Lin. Sp. Plant.* 148. Pimpernel with an undivided Leaf and upright Stalk. Narrow leaved Pimpernel with a blue Flower.

4. ANAGALLIS foliis cordatis amplexicaulibus, caulibus compressis. *Lin. Sp. P.* Pimpernel with Heart-shaped Leaves, embracing the Stalks which are compressed. Broad-leaved Spanish Pimpernel with a blue Flower.

The 1st Sort is very common in Corn Fields, and other cultivated Places, in *England*. The 2d Sort is found wild in the Fields, but is less common than the 1st in *England*. This is supposed to be only a Variety of the 1st, but from thirty Years cultivating it, I can affirm it never alters; and the Plants before they shew their Flowers are so different, as to be easily distinguished from the 1st. There is a Variety of this with a deeper blue Flower, whose Seeds I received from *Nice*, and this hath retained its Colour for three Years, during which Time I have sown it in the *Chelsea* Garden.

These are all annual Plants, which arise from Seeds and, if suffered to remain till their Seeds scatter, will become Weeds; they are never cultivated except in Botanic Gardens for Variety. The 1st and 2d Sorts are directed by the *College of Physicians* for medicinal Use.

The 3d Sort is a very beautiful small perennial Plant, producing great Numbers of fine blue Flowers, in *April* and *May*: This may be propagated by Seeds, which should be sown soon after they are ripe; for if they are kept till Spring, they do not always succeed: This Plant requires to be sheltered from extreme Cold, which will sometimes destroy it in Winter.

The 4th Sort was sent me from *Spain* by Mr. *Hortega*, Intendant of the Royal Garden at *Madrid*. This is a trailing annual Plant, with broad Leaves and blue Flowers. It will easily rise from Seeds, and requires no other Care but to keep the Plants clean from Weeds.

ANAGYRIS, Stinking Bean-trefoil.

The Characters are,

It hath a Bell-shaped Empalement, which is cut into five Parts at the Brim, the upper Segment being much deeper cut than the others. The Flower is of the Butterfly Kind, the Standard is Heart-shaped, upright, broad, and indented. This is much longer than the Empalement; the Wings are oblong, plain, and longer than the Standard; the Keel is long and upright: It hath ten Stamina, which rise distinct and are equal, and crowned with single Summits. In the Center is placed an oblong Germen, supporting a single Style having a hairy Stigma. The Germen afterward becomes a large oblong Pod, which is reflexed at the Point, in which is lodged several Kidney-shaped Seeds.

The Species are,

1. ANAGYRIS foliis ovatis floribus lateralibus. Stinking Bean-trefoil with oval Leaves, and Flowers proceeding from the Wings of the Stalks.

2. ANAGYRIS foliis oblongis racemis longioribus. Stinking Bean-trefoil of *Candia*, with oblong Leaves and yellow Flowers.

The 1st Sort grows wild in the South of *France*, as also in *Spain* and *Italy*: This is a Shrub which usually rises to the Height of eight or ten Feet, and produces its Flowers in *April* and *May*, which are of a bright yellow Colour, growing in Spikes, somewhat like those of the *Laburnum*: The Seeds are seldom perfected in this Country, which is the Reason of its present Scarcity in *England*.

The other Sort is a Native of *Candia*, and some of the Islands of the *Archipelago*, and at present is very rare in the *English* Gardens. This Sort hath longer Leaves than the former, and flowers later in the Summer, so that it very rarely produces Seeds.

These may be both propagated by laying down their tender Branches in the Spring, observing in dry Weather to supply them with Water; which if duly performed, the Layers will have taken Root by the following Spring, when they should be cut off from the old Plants, a little Time before they begin to put out their Leaves, and planted in a warm Situation; for if they are too much exposed to cold Winds, they will be in Danger of being destroyed in a hard Winter. This Method of propagating these Plants, is to supply their Defect in not producing ripe Seeds in this Country; for the Plants which are produced from Seeds, will be much handsomer, and will rise to a much greater Height.

If you propagate these Plants from Seeds, you should sow them on a warm Border of light fresh Earth about the End of *March*, observing to do it in dry Weather; for if much Wet should fall after the Seeds are in the Ground, they rot. If the Seeds are good and the Season favourable, the Plants will appear in a Month after they are sown; at which Time you should carefully clear them from Weeds, and in very dry Weather they should be frequently refreshed with Water: If these Rules be duly observed, the Plants will be six or eight Inches high before Winter. While young, they will be in much greater Danger of suffering by Frost: Therefore, if the Winter should prove very severe, you should shelter them with Mats during the Continuance of the Frost, but in mild Weather they should be exposed to the open Air. In *March* following you should carefully take up these Plants, observing not to injure their Roots; then transplant them into a Nursery Bed in Rows at a Foot Distance, and at six Inches Distance in the Rows; observing if the Season proves dry, to give them Water until they have taken new Root, after which they will require no other Culture, but to keep them clear from Weeds, during the Summer Season; but if the following Winter should prove very severe, it will be proper to screen them with Mats or Pease-haulm, and lay some rotten Tan over the Surface of the Ground, to prevent the Frost from penetrating to the Roots, otherwise they may be destroyed. In this Bed they may remain two Years, by which Time they will be fit to transplant into the Places where they are designed to remain. The best Season to remove them is in *March*, just before they begin to shoot, and observe not to injure their Roots; water them, if the Season should prove dry, until they have taken Root; and lay some Mulch on the Surface of the Ground about their Roots, to prevent the Air from penetrating to dry their Fibres, which will save much Trouble in Watering. The fourth Year from Seeds they will begin to produce Flowers, and will continue to Flower every Year after, so will be very proper to intermix with other flowering Shrubs of the same Growth in a warm Situation.

ANANAS, the Pine-apple.

The Characters are,

The Flower consists of three oval Petals; these are produced from the Protuberances of the pyramidal Fruit, and are stretched out beyond the Empalement. These have six Awl-shaped Stamina, which stand within the Flower, and are crowned with Spear-shaped Summits: The Germen is situated below the Flower, supporting a slender Style, crowned with a trifid Stigma. The Germen afterward becomes a Cell, in which is lodged several angular Seeds.

The Varieties of this are,

1. ANANAS aculeatus, fructu ovato, carne albida. Plum. Oval-shaped Pine Apple, with a whitish Flesh.
2. ANANAS aculeatus, fructu pyramidato, carne aurea. Plum. Pyramidal Pine Apple, with a yellowish Flesh; called the Sugar-loaf Pine.
3. ANANAS folio vix-ferrato. Boerb. Ind. Alt. 2. 83. Pine-apple with smooth Leaves.
4. ANANAS lucide virens, folio vix-ferrato. Hort. Elth. Pine-apple with shining green Leaves, and scarce any Spines on their Edges.
5. ANANAS fructu pyramidato, olivæ colore, intus aureo.

Pyramidal Olive-coloured Pine-Apple, with yellow Flesh.

6. ANANAS aculeatus, fructu pyramidato ex viridi flavescente. The green Pine-apple.

There are several other Varieties of this Fruit, some of which may have been obtained from Seeds; and I doubt not but if the Seeds were sown frequently, in the Countries where they are in Plenty, there would be as great Variety of these Fruit as there are of Apples or Pears in *Europe*. And this I have found true by some Trials which I have made by sowing the Seeds, which have always produced a Variety of Sorts.

This Fruit (which is justly esteemed for the Richness of its Flavour, as it surpasses all the known Fruits in the World), is produced from an herbaceous Plant, which hath Leaves resembling those of the Aloe, and are, for the most part, sawed on their Edges, but are much thinner, and not so juicy as the Aloe: The Fruit resembles the Cones of the Pine Tree, from whence it is supposed to have its Name.

Where this Plant is a Native, is hard to determine; but it is probably an indigenous Plant in *Africa*, where, they grow in uncultivated Places in great Plenty. They have been long cultivated in the hottest Islands of the *West-Indies*, where they are in great Plenty, and extraordinary Goodness; but it hath not been many Years in the *European* Gardens, so as to produce Fruit: The first Person who succeeded in this Affair, was Monsieur *Le Cour* of *Leyden* in *Holland*, who, after a great many Trials, with little or no Success, did at Length hit upon a proper Degree of Heat and Management, so as to produce Fruit equally as good (though not so large) as those which are produced in the *West-Indies*, as hath been often affirmed by Persons who have lived many Years there: And it is to this worthy Cultivator of Gardening, who did not spare any Pains or Expence to accomplish it, that all the Lovers thereof are obliged, for introducing this King of Fruits amongst them; it was from him that our Gardens in *England* were first supplied, though we have since had large Quantities brought from *America*. I cannot here avoid taking Notice of a common Error which prevails amongst many People, which is, that the Plants brought from *America* are not so good as those which came from *M. Le Cour*; but this is a great Mistake, for were the People who send over these Plants from *America* careful to send the best Kinds, there would be found many better than those cultivated by *M. Le Cour*, who had his from thence at first, as his Gardener assured me; and I have seen as good Fruit produced from *American* Plants, as any I have yet seen, and some three Times larger than any I saw in *M. Le Cour's* Garden.

The 1st Sort is the most common in *Europe*; but the 2d is much preferable to it, the Fruit of this being larger, and much better flavoured: The Juice of this Sort is not so astringent as that of the 1st, so it may be eaten in greater Quantity with less Danger. This Sort frequently produces Suckers, immediately under the Fruit, whereby it may be increased much faster than the common Sort; so that in a few Years, it may be the most common Sort in *England*.

The 3d Sort is preserved by some curious Persons for the Sake of Variety, but the Fruit is not worth any Thing. The 6th Sort is at present the most rare in *Europe*, there being

being very few of the Plants at present : This has been esteemed the best Sort known, by some of the most curious Persons in *America*, many of whom have thrown out all the other Sorts from their Gardens, and cultivate only this Kind. The Plants of this Sort may be procured from *Barbadoes* and *Montserrat*.

The Sort with very smooth Grass-green Leaves, was raised from Seeds taken out of a rotten Fruit, which came from the *West-Indies* to the late *Henry Heatcote*, Esq; from whom I received one Plant, which hath produced large Fruit : This, I am told, is what the People of *America* call the King Pine. I have since raised some Plants of this Kind from Seeds, which were brought me from *Jamaica*.

These Plants are propagated by planting the Crowns which grow on the Fruit, or the Suckers which are produced either from the Sides of the Plants, or under the Fruit, both which I have found to be equally good ; although by some Persons the Crown is thought preferable to the Suckers, as supposing it will produce Fruit sooner than the Suckers, which is certainly a Mistake ; for by constant Experience I find the Suckers (if equally strong) will fruit as soon, and produce as large Fruit as the Crowns.

The Suckers and Crowns must be laid to dry in a warm Place for four or five Days, or more (according to the Moisture of the Part which adhered to the old Plant or Fruit) ; for if they are immediately planted, they will rot. The certain Rule of judging when they are fit to plant, is by observing if the Bottom is healed over, and become hard ; for if the Suckers are drawn off carefully from the old Plants, they will have a hard Skin over the lower Part, so need not lie so long as the Crowns, or those whose Bottoms are moist. But whenever a Crown is taken from the Fruit, or the Suckers from old Plants, they should be immediately divested of their Bottom Leaves, so high as to allow Depth for their Planting ; so that they may be thoroughly dry and healed in every Part, lest when they receive Heat and Moisture, they should perish, which often happens when this Method is not observed. If these Suckers or Crowns are taken off late in the Autumn, or during the Winter, or early in the Spring, they should be laid in a dry Place in the Stove, for a Fortnight or three Weeks before they are planted, but in the Summer Season they will be fit for planting in three or four Days.

A rich good Kitchen Garden Mould, not too heavy, so as to detain the Moisture too long, nor over light and sandy, will be very proper for them without any Mixture : But where this is wanting, you should procure some fresh Earth from a good Pasture ; which should be mixed with about a third Part of rotten Neats Dung, or the Dung of an old Melon or Cucumber Bed, which is well consumed. These should be mixed six or eight Months at least before they are used ; but if it be a Year, it will be the better ; and should be often turned, that their Parts may be the better united, as also the Clods well broken. This Earth should not be screened very fine, for if you only clear it of great Stones, it will be better for the Plants than when made too fine. Always avoid mixing any Sand with the Earth, unless it be extremely stiff, and then it will be necessary to have it mixed at least six Months or a Year before it is used ; it must

be frequently turned, that the Sand may be incorporated in the Earth, so as to divide its Parts : But you should not put more than a sixth Part of Sand, for too much is very injurious to these Plants.

In the Summer Season when the Weather is warm, the Plants must be often watered, but you should not give them large Quantities at a Time : Also be very careful, that the Moisture is not detained in the Pots, by the Holes being stopped, for that will soon destroy the Plants. If the Season is warm, they should be watered twice a Week ; but in a cool Season, once will be often enough : During the Summer Season, you should once a Week water them gently all over their Leaves, which will wash the Filth from them, and thereby greatly promote the Growth of the Plants.

There are some Persons who frequently shift these Plants from Pot to Pot, but this is by no means to be practised by those who propose to have large well flavoured Fruit ; for unless the Pots be filled with the Roots, by the Time the Plants begin to shew their Fruit, they commonly produce small Fruit, which have generally large Crowns on them, therefore the Plants will not require to be new potted oftener than twice in a Season : The first Time should be about the End of *April*, when the Sucker's and Crowns of the former Year's Fruit (which remained all the Winter in those Pots in which they were first planted) should be shifted into larger Pots, *i. e.* those which were in Halfpenny, or Three-farthing Pots, should be put into Penny, or at most Three Halfpenny Pots, according to the Size of the Plants ; for you must be very careful not to overpot them, nothing being more prejudicial to them. The second Time for shifting them is in the Beginning of *August*, when you should shift those Plants which are of a proper Size for fruiting the following Spring, into Two-penny Pots, which are full large enough for any of these Plants. At each of these Times of shifting the Plants, the Bark Bed should be stirred up, and some new Bark added, to raise the Bed up to the Height it was at first made ; and when the Pots are plunged again into the Bark Bed, the Plants should be watered gently all over their Leaves, to wash off the Filth, and to settle the Earth to the Roots of the Plants. If the Bark Bed be well stirred, and a Quantity of good fresh Bark added to it, at this latter Shifting, it will be of great Service to the Plants ; and they may remain in the same Tan until the beginning of *November*, or sometimes later, according to the Mildness of the Season, and will require but little Fire before that Time. During the Winter Season these Plants will not require to be watered oftener than once a Week, according as you find the Earth in the Pots to dry : Nor should you give them too much at each Time, for it is much better to give them a little Water often, than to over-water them, at this Season.

You must observe never to shift those Plants which shew their Fruit into other Pots : for if they are removed after the Fruit appears, it will stop the Growth, cause the Fruit to be smaller, and retard its Ripening, so that many Times it will be *October* or *November* before it is ripe ; therefore you should be very careful to keep the Plants in a vigorous growing State, from the first Appearance of the Fruit, because upon this depends the Goodness

Goodness and Size of it ; for if they receive a Check after this, the Fruit is generally small and ill tasted.

When you have cut off the Fruit from the Plants, whose Kind you are desirous to propagate, you should trim the Leaves, and plunge the Pots into a moderate hot Bed, observing to refresh them frequently with Water, which will cause them to put out Suckers in Plenty ; so that a Person may be soon supplied with Plants enough of any of the Kinds, who will but observe to keep the Plants in Health.

There is not any Thing which can happen to these Plants of a more dangerous Nature, than to have them attacked by small white Insects, which appear at first like a white Mildew, but soon after have the Appearance of Lice : These attack both Root and Leaves at the same Time, and if they are not soon destroyed, will spread over a whole Stove in a short Time ; and in a few Weeks will entirely stop the Growth of the Plants, by sucking out the nutritious Juice, so that the Leaves will appear yellow and sickly, and have generally a great Number of yellow transparent Spots all over them. These Insects, after they are fully grown, appear like Bugs, and adhere so closely to the Leaves, as not to be easily washed off, and seem as if they had no Life in them. They were originally brought from *America* upon the Plants which were imported from thence, and I believe they are the same Insects which have destroyed the Sugar Canes of late Years in some of the *Leeward Islands*. Since they have been in *England*, they have spread greatly in such Stoves, where there has not been more than ordinary Care taken to destroy them. They have also attacked the Orange Trees in many Gardens near *London*, and have done them incredible Damage ; but I do not find they will endure the Cold of our Climate in Winter, so that they are never found on such Plants as live in the open Air. The only Method I have yet been able to discover for destroying these Insects, is by washing the Leaves, Branches, and Stems, of such Plants as they attack, frequently with Water, in which there has been a strong infusion of Tobacco Stalks, which I find will destroy the Insects, and not prejudice the Plants. But this Method cannot be practised on the *Ananas* Plants, because the Insects will fasten themselves so low between the Leaves, that it is impossible to come at them with a Sponge to wash them off ; so that if all those which appear to Sight are cleared off, they will soon be succeeded by a fresh Supply from below, and the Roots will also be equally infested at the same Time. Therefore, wherever these Insects appear on the Plants, the safest Method will be, to take the Plants out of the Pots, and clear the Earth from the Roots ; then prepare a large Tub, which should be filled with Water, in which there has been a strong Infusion of Tobacco Stalks ; into this Tub you should put the Plants, placing some Sticks cross the Tub, to keep the Plants immersed in Water. In this Water they should remain twenty-four Hours ; then take them out, and with a Sponge wash off all the Insects from the Leaves and Roots, which may be easily effected when the Insects are killed by the Infusion ; then cut off all the small Fibres of the Roots, and dip the Plants into a Tub of fair Water, washing them therein, which is the most effectual Way to clear them from the In-

sects. Then pot them in fresh Earth, and having stirred up the Bark Bed, and added some new Tan to give a fresh Heat to the Bed, the Pots should be plunged again, observing to water them all over the Leaves (as was before directed) a few Days after, and this should be repeated once a Week during the Summer Season ; for I observe these Insects always multiply much faster where the Plants are kept dry, than in such Places where the Plants are sometimes sprinkled over with Water, and kept in a growing State. The same is also observed in *America*, for it is in long Droughts that the Insects make such Destruction of the Sugar Canes ; and in those Islands where they have had several very dry Seasons of late, they have increased to such a Degree, as to destroy the greatest Part of the Canes, rendering them not only unfit for Sugar, but so poison the Juice of the Plant, as to disqualify it for making Rum, so that many Planters have been ruined by these Insects.

As these Insects are frequently brought from *America* on the *Ananas* Plants, those Persons who procure their Plants from thence, should look carefully over them when they receive them, to see they have none of these Insects on them ; for if they have, they will soon be propagated over all the Plants in the Stove where these are placed : Therefore, whenever they are observed, the Plants should be soaked (as was before directed) before they are planted into Pots.

It was formerly the common Practice of those Persons, who cultivated this Fruit in *Europe*, to build dry Stoves, in which they kept their Plants in Winter, placing the Pots on Scaffolds (after the Manner in which Orange Trees are placed in a Green-house), and in the Summer to place them in hot Beds of Tanners Bark under Frames. This was the Method practised in *Holland* for raising this Fruit which was first taught by Monsieur *Le Cour's* Gardiner to those Persons to whom his Master sent the Plants. But as their Culture has since become general in *England*, so there has been great Improvements made not only in the Contrivances of the Stoves, but also in the Culture of the Plants. By the former Method, the Plants were kept upon Shelves at least four or five Months, whereby the extreme Fibres of their Roots became dry and hard ; and if the Plants were too often watered, it occasioned their rotting ; so that during the Winter Season, when the Plants should be preparing their Fruit for the next Summer, they were at a stand, making little or no Progress, whereby the Fruit did not appear early enough in the Spring to ripen in Summer, nor were they so large.

Therefore, to remedy this Inconvenience, it is now the Practice of those Persons who are desirous to propagate this Fruit, to erect low Stoves, with Pits therein for the hot Bed, in the Manner hereafter described and figured ; these are built in different Ways, according to the Fancy of the Contriver. Some Persons build them with upright Glasses in Front, about four Feet high, and sloping Glasses over these, which rise about six Feet high, so that there is just Height enough for Persons to walk upright on the Back-side of the Bark Bed. Others make but one Slope of Glasses from the Top of the Stove ; down to the Plate, which lies about six or eight Inches above the Bark Pit in the Front of the Stove ; so that in this Stove, there is no Walk made

in the Front between the Bark Pit and the Glasses; but the Inconveniency of watering the Plants, as also of coming near those Plants which are placed in the Front of the Stove to clean them, has, in some Measure, brought them into Disesteem, so that few Persons now build them, though the Expence is much less than of the other Kind of Stoves; but the Figures and Descriptions which are hereafter exhibited under the Article of Stove, will be sufficient for any Person to build either of the Sorts. One of these Stoves about twenty-five Feet long in the Clear, with the Tan Pit reaching from End to End, and six Feet and a half wide, will contain about a hundred Plants; so that whoever is desirous to have this Fruit, may easily proportion their Stove to the Quantity of Fruit they are willing to have.

But it will be also necessary to have a Bark Pit under a deep Frame, in order to raise the young Plants; for in this Bed you should plunge the Suckers, when they are taken from the old Plants, as also the Crowns which come from the Fruit, so that this Frame will be as a Nursery to raise the young Plants to supply the Stove: These Plants should not remain in these Frames longer than till the Beginning of *November*, unless the Frame is built with Brick-work and Flues in it to warm the Air (in the Manner hereafter described and figured), which are very useful, as Nurseries, to keep the young Plants till they are of a proper size to produce Fruit; so that you may keep those either warmer or cooler than the Stove, according as the Plants may require, so that the Stove may be every Autumn filled only with bearing Plants, whereby a much greater Quantity of Fruit may be annually produced, than can be where young and old Plants must be crowded into the same Stove: But where there are no Conveniencies of this Kind, the young Plants about the Middle or latter End of *October*, must be removed into the Stove, and being small, may be crowded in among the larger Plants; for as they will not grow much during the Winter Season, they may be placed very close together. The Beginning of *March*, where there is no Nursery for the young Plants, they must be removed out into the hot Bed again, which should be prepared a Fortnight before, that the Tan may have acquired a proper Heat: But you should be careful that the Tan be not too hot, for that might scald the Fibres of the Plants, if they are suddenly plunged therein. Therefore if you find the Bark too hot, you should not plunge the Pots above two or three Inches into the Tan, letting them remain so until the Heat of the Tan is a little abated, when you should plunge them down to their Rims in the Bed. If the Nights continue cold after these Plants are removed into the Bed, you must carefully cover the Glasses with Mats; otherwise by coming out of a warm Stove, they may receive a Check, which will greatly retard their Growth, which must be carefully avoided; because the sooner the Plants are set growing in the Spring, the more Time they will have to gain Strength, in order to produce large Fruit the following Season.

You should not plunge the Pots too close together in this Frame, but allow them a proper Distance, that the lower Part of the Plants may increase in Bulk, for it is on this that the Magnitude of the Fruit depends; because when the Plants are placed too close, they draw

up very tall, but do not obtain Strength; so that when they are taken out of the Bed, the Leaves are not able to support themselves; but all the outward long Leaves fall down, leaving the smaller middle Leaves naked, and this sometimes will cause them to rot in the Centre. Observe also when the Sun is very warm, to raise the Glasses of the hot Bed with Stones, to let out the Steam of the Bed and to admit fresh Air; for one Neglect of this Kind in a very hot Day, may destroy all the Plants, or so scald them, that they will not get over it in many Months. It will be also very proper, in extreme hot Weather, to shade the Glasses in the Middle of the Day with Mats; for the Glasses, lying so near the Leaves of the Plants, will occasion a prodigious Heat at such Times.

During the Summer Season, these Plants must be frequently watered, giving them but little each Time; and in hot Weather, they must have free Air admitted to them every Day, from Ten o'Clock till Four; for, if they are kept too close, or have too much Wet, they will receive a Check in their Growth, when the Insects will immediately spread over them; there are generally some of these Insects on all these Plants, which do not much Injury to the Plants while they are in a growing State; but whenever they are unhealthy, the Insects multiply greatly, and contribute to their Decay. There are some Persons who regulate the Heat of their Stoves by Thermometers in Summer, but at that Season this is unnecessary, for the outward Air in hot Weather is frequently greater than the Ananas Heat marked on the Thermometers, so that the Heat of the Stoves at that Season will be much greater. The Use of the Thermometer is only in Winter, during the Time the Fires are continued, by which it is easy to judge when to increase or diminish the Fires; for at that Season, the Stoves should not be kept to a greater Warmth than five or six Divisions above Ananas, nor suffered to be more than as many Divisions below it. In Winter the Plants must have less Water, but they will require to have it repeated once a Week, giving them but little each Time: When the Plants are placed into the Tan for the Winter Season (which should be done about the Beginning of *October*), the Bed should be renewed, adding two Thirds of new Tan, to one Third of the old. If this be well mixed, and the new Tan is good, the Bed will maintain a proper Degree of Warmth till *February*, at which Time it will be proper to stir up the Bed, and add a Load or two of new Tan, so as to raise it as much as it sunk since Autumn; this will give a fresh Heat to the Bed, and keep the Plants growing, which will be absolutely necessary as the Fruit will now begin to appear, otherwise the Fruit will not be large; for if they receive any Check at this Time, it will greatly injure them.

In *April* it will be proper to stir up the Tan again, and if the Bed has sunk since the last stirring, it will be proper to add some fresh Tan to it; this will renew the Warmth of the Bed, and forward the Fruit. At this Time it will be proper to shift the young Plants, which are designed to produce Fruit the following Year; the Tan Bed into which these are plunged must be renewed, in order to forward their Growth, that they may have Strength enough by Autumn to produce good Fruit, for this is the principal Care required.

Those Plants which shew their Fruit early in *February*

will ripen about *June*; some Sorts are at least a Month or five Weeks longer in ripening their Fruit than others, from the first Appearance of the Fruit: But the Season in which it is in the greatest Perfection, is from the Beginning of *May* to the End of *September*; though in *March*, *April*, and *October*, I have frequently eaten this Fruit in pretty good Perfection; but the Plants have been in perfect Health, otherwise they seldom are well flavoured.

The Method of judging when the Fruit is ripe, is by the Smell, and from Observation; for as the several Sorts differ from each other in the Colour of their Fruit, that will not be any Direction when to cut them; nor should they remain so long as to become soft to the Touch before they are cut, for then they are flat and dead, also when cut long before they are eaten: Therefore the surest Way to have this fruit in Perfection, is to cut it the same Day it is eaten; but it must be cut early in the Morning, before the Sun has heated the Fruit, observing to cut the Stalk as long to the Fruit as possible, and lay it in a cool, but dry Place, preserving the Stalk and Crown unto it, until it is eaten.

That Sort with green Fruit, if suffered to ripen well, is of an Olive Colour; but there are some Persons who cut them before they are ripe, when they are not fit to be eaten, for no other Reason, but to have them green: and although many Persons have much recommended this Sort for its excellent Flavour, yet I think the Sugar Loaf Sort is to be preferred to it.

This Sugar Loaf Sort is easily distinguished from all the other, by its Leaves having purple Stripes on their Inside the whole Length. The Fruit is of a paler Colour than the others when ripe, inclining to a Straw Colour. This Sort was brought from *Brasil* to *Jamaica*, where it is esteemed far beyond the other Kinds.

The next in Goodness to this, is what the Inhabitants of the Islands in *America* call the *Montserrat* Pine; the Leaves of this are of a dark Brown, inclining to Purple on their Inside; the Protuberances of the Fruit are larger and flatter than those of the common Sort. I raised several Plants of this Sort from Seeds which I received from the Island of *St. Thomas*, where this Fruit is in greater Perfection than any of the *British* Islands.

ANAPODOPHYLLON. See Podophyllum.

ANASTATICA. Lin. Gen. Pl. Rose of *Jericho*.

The Characters are,

It hath a four leaved Empalement, which is deciduous. The Flower hath four roundish Petals placed in Form of a Cross. It hath six Awl-shaped Stamina, two being shorter than the other which are turned inward, the others are erect, these are crowned with roundish Summits; in the Center is situated a bifid Germen, supporting an Awl-shaped Style, which is the Length of the Stamina, and crowned with a round Stigma. The Germen becomes a short Capsule, with two Cells, having in each a single Seed.

We know but one Species of this Genus, viz.

ANASTATICA. Hort. Cliff. 328. Rose of *Jericho*.

This Plant grows naturally on the Sands near the Borders of the *Red Sea*, and in *Syria*. It is a low annual Plant, dividing into many irregular woody Branches near the Root; at each Joint is placed a single, oblong, hoary Leaf, and at the same Places come out small single Flowers of a whitish green Colour, composed of four small Leaves, placed in form of a Cross, like the other Plants of this

Class. These are succeeded by short wrinkled Pods, having four small Horns; these open in two Cells, in each of which is lodged a single brown Seed.

It had the Epithet of *Rosa Maria* given to it by the Monks, who superstitiously supposed that the Flowers open on the Night that our Saviour was born. But the Truth is, that the dry woody Plant being set for some Time in Water, will dilate and open so as to disclose the Seed Vessels and Seeds. This I have seen done when the Plants have been many Years gathered, so that there are several curious Persons who preserve them among their Curiosities, for this singular Property.

This Plant is propagated by Seeds, which should be sown the Beginning of *April*, on a Border of light sandy Earth, where it is designed to remain, for it will not bear transplanting. When the Plants come up, they should be thinned, leaving them about six Inches distant from each other, and observe to keep them clean from Weeds, this is all the Care they require. If the Season proves favourable, the Plants will flower in *August*, but unless the Autumn proves warm and dry, they will not ripen their Seeds in *England*, nor could I rarely procure Seeds from those Plants which were raised in Autumn, for if much Rain happens when the Plants are in Flower, they never perfect any Seeds.

ANCHUSA. Lin. Gen. 167. Buglossum. Tourn. Inst.

The Characters are,

The Empalement of the Flower is oblong, taper, and permanent; this is cut into five acute Segments which are erect. The Flower is of one Leaf, having a cylindrical Tube the Length of the Empalement; at the Brim it is cut into five obtuse upright Segments, which spread open, but the Chaps are closed, and have five prominent little Scales. There are five short Stamina in the Chaps of the Flower, which are crowned with oblong Summits. In the Bottom of the Flower are situated four Germen, having a slender Style, crowned with an obtuse Stygma. The Germen afterwards becomes four oblong blunt Seeds shut up in the Empalement.

The Species are,

1. ANCHUSA foliis lanceolatis bifutis, floribus capitatis axillaribus pedunculis longissimis. Alkanet with rough Spear-shaped Leaves, and Flowers collected in a Head, having long Foot Stalks. Greater Garden Bugloss.

2. ANCHUSA racemis subnudis conjugatis. Prod. Leyd. 408. Alkanet with conjugated Spikes half naked. Perennial wild Borage with a Carmine Flower.

3. ANCHUSA strigosa foliis linearibus dentatis pedicellis bracteâ minoribus calycibus fructiferis inflatis. Alkanet with narrow indented Leaves, small Foot Stalks to the Branches, and a swelling Empalement over the Seeds. Portugal Bugloss with a waving Viper's Bugloss Leaf.

4. ANCHUSA ramis floribusque alternis axillaribus bracteis ovatis. Alkanet with Branches and Flowers growing alternately from the Wings of the Stalks, and oval Branches. Eastern Bugloss with a yellow Flower.

5. ANCHUSA floribus sparsis caule glabro. Lin. Sp. Plant. 133. Alkanet with Flowers growing thinly and a smooth Stalk. Small yellow Alkanet of *Virginia*, called by the Inhabitants *Puccoon*.

6. ANCHUSA pedunculis diphyllis capitatis. Lin. Sp. Plant. 134. Alkanet with Foot Stalks having two Leaves. Broad leaved Ever-green Borage.

7. ANCHUSA foliis lanceolatis verrucosis semialexicaulis

caulibus, floribus capitatis, caule procumbente. Alkanet with warted Spear-shaped Leaves embracing the Stalk half round, Flowers growing in a Head and a trailing Stalk.

8. *ANCHUSA foliis lanceolatis spicis imbricatis secundis.* Hort. Cliff. 46. Alkanet with Spear-shaped Leaves and imbricated fruitful Spikes. *Buglossum creticum majus, &c.* Greater *Candia* Buglofs with a purplish blue Flower.

9. *ANCHUSA foliis longis hirsutis, floribus capitatis reflexis pedunculis longissimis.* Alkanet with long hairy Leaves, and Flowers collected into Heads which are reflexed, and very long Foot Stalks.

The 1st Sort is the Buglofs, whose Flowers are ordered to be used in Medicine. This sends up Stalks about two Feet and a half high, which have oblong rough Leaves, placed alternately, at the Extremity of the Shoots. The Flowers are produced in Clusters, which are of a fine blue Colour; these come out with Foot Stalks from the Wings of the Leaves, and are collected into small Heads. The Flowers are of one Leaf, having a long Tube, and spread open at the Top in Shape of a Funnel. After the Flower is past, it is succeeded by four naked Seeds, situated at the Bottom of the Empalement, and drop out as they ripen.

The Roots of this Sort seldom continue longer than two or three Years, especially in good Ground, for they are subject to rot in Winter, unless when they happen to grow in Rubbish, or out of an old Wall, where they will live several Years; in such Places the Plants are stunted in their Growth, so their Branches are firmer and not so full of Juice as those which grow in better Soil. The Plants may be easily propagated by Seeds sown either in the Spring or Autumn, upon a Bed of light sandy Earth; and when the Plants are strong enough to remove, they should be planted in Beds at two Feet Distance, observing, if the Season proves dry, to water them till they have taken Root, after which Time they will require no farther Care but to keep them clean from Weeds. The Plants which come up in the Autumn, will flower the following June, and ripen their Seeds in August; but those which are sown in the Spring, do not often flower the same Year, or if they do, it is late in the Season, so will not ripen their Seeds. If the Seeds of this Plant are permitted to scatter, the Plants will rise in Plenty, which may be managed in the Manner before directed. There is a Variety of this with white Flowers, but this will not retain its Difference from Seeds.

The 2d Sort grows to the Height of two Feet in Gardens, but in Places where it grows wild, is rarely more than a Foot and a Half high. The Leaves of this are narrow, and less hairy than those of the first; the Spikes of Flowers come out double, and have no Leaves about them; the Flowers are small, and of a red Colour. The Roots will continue three or four Years in poor Land.

The 3d Sort is a biennial Plant, which perishes soon after the Seeds are ripe. It grows two Feet high, and sends out many lateral Branches, which are garnished with long narrow rough Leaves, waved on their Edges: The Flowers are of a bright blue Colour, and grow in an imbricated Spike; after these fall, the Empalement turns to a swollen Vessel inclosing the Seeds.

The 4th Sort is a perennial Plant, with long trailing Branches which lie on the Ground; the under Leaves are long, broad, and hairy, but these diminish as they

are nearer the Top, and those which come out on the Spikes between the Flowers are short and roundish; they are yellow, and about the Size of those of the common Buglofs; there is a Succession of them on the same Plants great Part of the Year, which renders them more valuable. This, though a Native of the *Levant*, is hardy enough to live in the open Air in *England*, if it hath a dry sandy Soil. It may be propagated by Seeds in the same Manner as the 1st Sort, and if they are permitted to scatter, the Plants will rise without Care.

The 5th Sort is a Native of *North-America*, where it grows naturally in the Woods, and being an early Plant, generally flowers before the new Leaves come out on the Trees; so that in some of the Woods, where this Plant abounds, the surface of the Ground seems covered with its bright yellow Flowers. It is known in that Country by the Title of *Puccoon*. It is perennial, and seldom rises a Foot high in good Ground, but not above half that Height, where the Soil is poor; the Flowers grow in loose Spikes, upon a smooth Stalk. This is propagated by Seeds, sown in Autumn.

The 6th Sort is a very hardy perennial Plant, with weak trailing Branches; these are garnished with broad, rough, deep green Leaves; the Flowers are blue, and come out between the Leaves on the Spike, like the fourth Sort; the Plants frequently grow out of the Joints of old Walls, in those Places where any of the Plants have been near; for when the Seeds are permitted to scatter, there will be an abundant Supply of the Plants. These flower great Part of the Year.

The 7th Sort is a low trailing annual Plant, whose Branches seldom extend more than six Inches; these lie on the Surface of the Ground, and are thinly set with Spear-shaped small warted Leaves, which half surround the Stalk at their Base. The Flowers are small, of a bright blue Colour, and are collected into small Bunches at the Extremity of the Branches. The Plants perish soon after their Seeds are ripe, which if permitted to scatter, the Plants will come up better than when they are sown, and should remain in the Places where they come up.

The 8th Sort rises near as high as the first, to which it bears great Resemblance in its Leaves and Branches; but the Flowers grow on long Spikes coming out *imbricatum*, like the Tiles on a House in which it differs from that. There are two Varieties of this, one with a white, and the other a red Flower. This Plant grows naturally in the *Levant*, but is equally hardy with the 1st Species, and may be cultivated in the same Manner.

The 9th Sort is a perennial Plant, with broad rough Leaves, like those of the 6th; the Branches grow more erect, and the Flowers are of a bright azure Colour, collected into Spikes, coming out singly from between the Leaves. This is a hardy Plant, and may be propagated in the same Manner as the former.

ANCHUSA RADICE RUBRA. See *Lythospermum*.
ANDRACHNE, Bastard Orpine.

The Characters are,

There are male and female Flowers on the same Plant. The male flower hath a five leaved Empalement, which is equal and withers. The Flower is composed of five slender Leaves indented at the Top, which are shorter than the Empalement. At the Bottom of each Petal is situated an herbaceous

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baceous Nectarium, to which the five slender Stamina are joined; these are crowned with single Summits. The female Flowers come out from the Wings of the Stalk near the male. These have a permanent five leaved Empalement, but no Petals; there are five Nectariums as in the male, and a globular Germen supporting three slender Styles which are bifid, crowned with a round Stigma. The Germen turns to a three cornered globular Capsule having three Cells, in each of which are two triangular obtuse Seeds.

The Species are,

1. *ANDRACHNE procumbens herbacea. Lin. Sp. Plant. 1014.* Herbaceous trailing *Andrachne*. Bastard Orpine with trailing Branches and a white Flower.
2. *ANDRACHNE caule erecto herbacea, foliis pinnatis floriferis, foliolis alternis.* *Andrachne* with an upright herbaceous Stalk, pinnated Leaves bearing the Flowers, and the small Lobes placed alternately.
3. *ANDRACHNE foliis lanceolatis acuminatis caule arboreo.* Tree *Andrachne* with Spear-shaped pointed Leaves.
4. *ANDRACHNE foliis ovatis, petiolis floribus longissimis, caule arboreo. i. e. Andrachne* with oval Leaves, long Foot Stalks to the Flowers, and a tall woody Stem.
5. *ANDRACHNE foliis ovatis obtusis subtus incanis caule arboreo. i. e. Tree Andrachne* with oval blunt Leaves, white on their under Side.

The 1st Sort is a low Plant whose Branches trail upon the Ground. The Leaves are small, of an oval Shape, smooth, and of a Sea-green Colour. It is found wild in some Parts of Italy, and in the Archipelago, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris. Being a Plant of no great Beauty, it is seldom cultivated, but in Botanic Gardens for Variety. If the Seeds are sown on a Bed of common Earth in Autumn, soon after they are ripe, the Plants will come up the Spring following, and produce Flowers and Seeds; but if it is sown in the Spring, the Seeds will often remain in the Ground until the next Year, before they come up. This Plant doth not bear transplanting well, therefore should be sown where it is to remain; and will require no other Culture, but to keep the Plants clear from Weeds. It should have a light dry Soil and a warm Situation; this seldom continues longer than two Years.

The 2d Sort grows about one Foot high, with an upright herbaceous Stalk, divided into several Branches; these have long winged Leaves, placed alternately, each being composed of many oval Lobes (or small Leaves) growing alternately. On the lower Side of the Mid-rib, the Flowers are produced the whole Length, hanging downward, and closely joined to it. These are composed of five small whitish Petals, at the Bottom of each is situated a Nectarium, each supporting a Stamina, (in the male Flowers) which is crowned by obtuse Summits; the female Flowers have the same Structure, but instead of Stamina, the Nectariums have a trifid Style. The Germen afterward turns to a tricapfular Vessel, having three Cells, each having a single Seed.

This is a Native of the Islands in America, but particularly grows in great Plenty in Barbadoes; from which Place I have not received one Tub of Earth with other Plants, in which this has not grown up as a Weed, and by this Way the Plant was first obtained in England; for the Seeds scatter as soon as they are ripe, so that unless they are carefully watched, they will be

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lost; but as these fall on the neighbouring Pots, so the Plants generally come up in Plenty, where they are placed in a Stove, being too tender to thrive in the open Air in this Country. It seldom lives through the Winter, but the Plants which arise from the scattered Seeds, flower in July, and the Seeds ripen soon after; so that they seldom fail to sow themselves in Plenty, therefore require no other Care, but to transplant them into small Pots, and treat them as other tender exotic Plants.

The three other Sorts grow to the Height of twenty Feet, with strong woody Stems, and divided into many Branches; these have single Leaves, which are placed alternately on the Branches. The Flowers grow on the under Side of the Branches, those of the fourth having long Foot Stalks, by which they hang downward. The other two have very short ones, but the Flowers of all the Sorts have the same Position. The Fruit of the last Sort is as large as a Walnut, having a hard woody Shell, divided into three Cells, in which the Seeds are lodged.

These Sorts were discovered by the late Dr. William Houfoun, the 3d at La Vera Cruz, the 4th and 5th at Campeachy, from whence he sent their Seeds to England.

ANDROMEDA, Lin. Gen. Plant. 485.

The Characters are,

The Empalement of the Flower is cut into five small acute Segments, this is coloured and permanent. The Flower is of one Leaf, is oval and Bell-shaped, and divided into five Parts at the Brim, which are reflexed. It hath ten Awl-shaped Stamina, which are shorter than the Petals to which they are fixed; these are crowned with nodding Summits having two Horns. In the Center of the Flower is situated a round Germen, supporting a cylindrical Style, which is longer than the Stamina, and crowned with a blunt Stigma. The Germen afterward turns to a round pentagonal Vessel having five Cells, which are filled with small round Seeds.

The Species are,

1. *ANDROMEDA pedunculis aggregatis, corollis ovatis, foliis alternis lanceolatis revolutis. Lin. Sp. Plant. 393. i. e. Andromeda* with aggregate Foot Stalks, oval Petals and Spear-shaped Leaves growing alternately.
2. *ANDROMEDA pedunculis aggregatis corollis cylindricis foliis alternis ovatis integerrimis. Lin. Sp. Plant. 393.* *Andromeda* with aggregate Foot Stalks, cylindrical Flowers, and oval entire Leaves placed alternately.
3. *ANDROMEDA racemis secundis nudis paniculatis, corollis subcylindricis foliis alternis oblongis crenulatis. Lin.* *Andromeda* with naked fruitful loose Spikes, cylindrical Flowers, and oblong crenated Leaves placed alternately.
4. *ANDROMEDA racemis secundis nudis corollis rotundo-ovatis. Lin. Sp. Plant. 394.* *Andromeda* with naked fruitful Spikes, and oval roundish Flowers. Commonly called Sorrel Tree in Carolina.
5. *ANDROMEDA racemis secundis foliaceis corollis subcylindricis, foliis alternis lanceolatis obtusis punctatis. Lin. Sp. Plant. 394.* *Andromeda* with leafy fruitful Spikes, cylindrical Flowers, and obtuse Spear-shaped Leaves, with Punctures placed alternately.

The 1st Sort is a low Plant which grows naturally on Bogs in the Northern Countries, but is with Difficulty preserved in Gardens; and having little Beauty, is seldom cultivated except in Botanic Gardens. I received the Seeds from Peterfburg, which came up in the Chelsea Garden,

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Garden, but continued only one Year.

The 2d Sort grows naturally in *North America*: This is a low Shrub, which sends out many woody Stalks from the Root, which are garnished with oval Leaves placed alternately; the Flowers are collected in small Bunches: These are shaped like those of the Strawberry Tree, and are of an herbaceous Colour. They appear in *June* and *July*, and sometimes are succeeded by Fruit, which seldom ripen in *England*.

The 3d Sort is also a Native of *North America*. This Shrub grows about four Feet high, sending out several Branches, clothed with oblong Leaves placed alternately; the Flowers grow in loose Spikes from the Ends of the Branches; these are of the Pitcher Shape, like those of the *Arbutus*, but a little longer. They appear in *July*, but do not produce Seeds in this Country.

The 4th Sort grows naturally in *Virginia* and *Carolina*; in the latter it is much larger, the Climate being warmer; so many of the Trees and Shrubs grow much higher there. In *Virginia*, this is a Shrub growing ten or twelve Feet high, but in *Carolina* it rises twenty Feet. The Branches are very slender, bending downward; these are garnished with Leaves placed alternately, which are oblong and pointed: The Flowers grow in long naked Spikes, coming out from the Sides of the Branches, which are of an herbaceous Colour, and are ranged on one Side of the Stalk; they are oval, and shaped like a Pitcher.

The 5th Sort grows naturally in *Siberia*, also in *North America*; it is a low Shrub and grows on mossy Land, so is difficult to keep in Gardens. The Leaves are shaped like those of the Box Tree and of the like Consistence, having several small Punctures on them; the Flowers grow in short Spikes from the Extremity of the Branches: They are produced single between two Leaves, are white and of a cylindrical Pitcher Shape.

All the Sorts, except the 4th, are very hardy, and delight in moist Ground; they increase by their creeping Roots, which put up Suckers at a Distance, and may be taken off with Roots, and transplanted where they are to remain, for they do not bear to be often removed.

The 4th Sort requires to be sheltered from hard Frost in Winter, and in Summer should be often watered. It is a difficult Plant to keep in Gardens, as it grows naturally on boggy Places, and requires a greater Heat than that of this Climate. It may be propagated by Seeds from *America*, where it is known by the Name of Sorrel Tree.

ANDROSACE. There is no English Name for it.

The Characters are,

The Flowers grow in an Umbel, at the Bottom of the Foot Stalks; they have a many leaved general Involucrum. Each Flower hath a five cornered Empalement of one Leaf, slightly indented at the Top in five acute Points, this is permanent; the Flower is of one Leaf, having an oval Tube, inclosed by the Empalement, but is plain at the Brim, where it is divided into five Parts. It hath five small Stamina within the Tube, which are crowned with oblong erect Summits. In the Center is situated a round Germen, supporting a short slender Style crowned by a globular Stigma; the Empalement afterward becomes a round Capsule of one Cell opening in five Parts, which is full of round Seeds.

The Species are,

1. **ANDROSACE perianthiis maximis.** Hort. Upsal. 36. *Androsace* with the largest Empalement. Common broad leaved annual *Androsace*.

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2. **ANDROSACE foliis lanceolatis dentatis glabris perianthiis angulatis corollâ brevioribus.** Flor. Suec. 160. *Androsace* with Spear-shaped Leaves, which are smooth and indented, and an angular Empalement shorter than the Petals. Spring Chickweed with Heads like *Androsace*.

3. **ANDROSACE foliis pilosis perianthiis brevibus.** Lin. S. Pl. 142. *Androsace* with hairy Leaves and Empalement. Alpine Hairy Houfleeck with a milk white Flower.

4. **ANDROSACE foliis ciliatis.** Lin. Sp. Plant. 142. *Androsace* with glittering Leaves.

5. **ANDROSACE foliis linearibus glabris, umbellâ involucris multoties longiore.** Lin. Sp. Plant. 142. *Androsace* with narrow smooth Leaves, and the Umbel much longer than the Involucrum. Perennial *Androsace* of the Alps, with a narrow smooth Leaf and a single Flower.

6. **ANDROSACE foliis subulatis glabris umbellâ involucris brevioribus.** Lin. Sp. Plant. 142. *Androsace* with smooth Awl-shaped Leaves and the Involucrum shorter than the Umbel. Perennial Alpine *Androsace* with a narrow smooth Leaf and many Flowers.

The 1st Sort grows naturally in *Austria* and *Bohemia* amongst the Corn: This hath broad Leaves which spread near the Ground, from the Center of these the Foot Stalks arise, which are terminated by the Umbel of Flowers, like those of the *Auricula*; under the Umbel of Flowers is a large Empalement, which is permanent; the Flowers are composed of five small white Petals; these appear in *April* and *May*, the Seeds ripen in *June*, and the Plants soon after perish.

The other Sorts are much smaller than this, some of them seldom growing more than three Inches high, and have very small Flowers, so make little Appearance. They grow naturally on the Alps and *Helvetian* Mountains, also in *Siberia*. These are only preserved in Botanic Gardens for the Sake of Variety, and all the Sorts except the first should have a shady Situation.

The Seeds of all the Sorts should be sown soon after they are ripe, otherwise they seldom grow the same Year.

They flower usually the Beginning of *April*, and their Seeds are ripe the End of *May*; which, if permitted to scatter, will come up, and often succeed better than those which are sown. The annual Sorts perish as soon as the Seeds are ripe, but the others will live in an open Border several Years, and require no other Care, but to keep them clean from Weeds.

ANDROSÆMUM. See *Hypericum*.

ANDRYALA. Lin. Gen. P. 820. Downy Snow-thistle.

The Characters are,

It hath a short round hairy Empalement, cut into many equal Segments; the Flowers are composed of many hermaphrodite Flowers, which are uniform, and lie over each other; these are of one Leaf, stretched out like a Tongue on one Side. There are five Stamina in the Flowers; these are crowned by cylindrical Summits which are tubulous. The Germen is situated at the Bottom of each Floret, with a slender Style crowned by two reflexed Stigma. The Germen afterward becomes a single oval Seed, crowned with Down.

The Species are,

1. **ANDRYALA foliis integris.** Guett. Hort. Up. Downy Sowthistle with whole Leaves.

2. **ANDRYALA foliis dentato-bastatis.** L. S. P. Downy Sowthistle with indented Spear-shaped Leaves.

The 1st is an annual Plant, which grows naturally in the

the South of *France, Spain, and Italy*, and is preserved in Botanic Gardens for the Sake of Variety. This grows one Foot and a Half high, with woolly branching Stalks, having Leaves scatteringly set on them; which are oblong and downy. The Flowers are produced in small Clusters at the Top of the Stalks, which are yellow, and like those of the Sowthistle, so do not make any great Appearance. It is easily raised by Seeds, which should be sown in Spring, where the Plants are to remain, and will require no other Culture but to thin them where too close, and keep them clean from Weeds. It flowers in *July*, and the Seeds ripen in *September*.

The 2d is a perennial Plant, which grows naturally in *Spain*, from whence and from the *Cape of good Hope*, I received the Seeds. The Leaves of this Plant are extremely white, and much indented on their Edges; the Flower Stalks grow about a Foot high, having small Clusters of yellow Flowers, which appear in *July*; the Seeds sometimes ripen in *England*. The Roots creep, by which the Plants may be propagated. They love a light dry Soil, in which they will live in the open Air.

ANEMONE. Wind-flower.

The Characters are,

The Flower is naked having no Empalement, and consists of two or three Orders of Leaves or Petals, which are oblong and disposed in three Series over each other. It hath a great Number of slender Stamina which are shorter than the Petals, and are crowned by double erect Summits; between these are situated many Germen, collected into a Head, supporting a pointed Style crowned with a blunt Stigma. The Germen becomes so many Seeds inclosed with a Down which adhere to the Foot Stalk, and form an obtuse Cone.

The Species are,

1. ANEMONE *pedunculo nudo seminibus subrotundis birsutis*. L. S. P. 540. Anemone with a naked Stalk and round hairy Seeds. Wild Anemone with a large white Flower.

2. ANEMONE *feminibus acutis foliis incisic caule uniflora*. Hort. Cliff. 224. Anemone with pointed Seeds, cut Leaves and a single Flower. Wild or Wood Anemone with a large Flower. *Anemonoides Boerb. Ind. Alt.*

3. ANEMONE *feminibus acutis foliis incisic petalis lanceolatis numerosis*. Lin. Sp. Plant. 541. Anemone with pointed Seeds, cut Leaves, and many Spear-shaped Flower Leaves. Wood Anemone with a blue Flower.

4. ANEMONE *pendunculis alternis longissimis fructibus cylindricis feminibus birsutis muticis*. Anemone with very long alternate Foot Stalks and cylindrical Spikes of hairy Seeds. Small white flowering *Virginia Anemone*.

5. ANEMONE *foliis radicalibus ternato-decompositis, involucri foliofo*. Lin. Sp. Plant. 539. Anemone with lower Leaves decomposed, and a leafy Involucrum. Narrow leaved Anemone with a single Flower.

6. ANEMONE *foliis digitatis*. Lin. Sp. P. Anemone with fingered Leaves. Broad leaved Garden Anemone.

The 1st Sort grows naturally in *Germany*; this approaches near to our Wood Anemone, but the Seeds of it are round and hairy; the Flower is large and white, but having little Beauty, is seldom planted in Gardens.

The 2d Sort grows wild in the Woods in many Parts of *England*, where it flowers in *April and May*, making a pretty Appearance in those Places where they are in Plenty. The Roots of this may be taken up when their Leaves decay, and transplanted in Wildernesses, where

they will thrive and increase greatly, if not disturbed; and in Spring, before the Trees are covered with Leaves, they will have a very good Effect, in covering the Ground and making a pleasing Variety at that Season.

The 3d Sort is found growing naturally in some Parts of *England*, but particularly at *Wimbledon* in *Surrey*, in a Wood near the Mansion House, in great Plenty; but it is not certain that they were not originally planted there, as they are not found in any other Place in that Neighbourhood. This Sort flowers at the same Time with the former, and when intermixed with them, make a fine Variety. This may be transplanted from the Woods as the former.

There are some of these two Sorts with double Flowers, which have been obtained from Seeds. These make a finer Appearance, and continue longer in flower than the single Sorts, but are only to be procured from the Gardens, where they are cultivated. As these are only femal Varieties, so I have not enumerated them.

The 4th Sort grows naturally in *North America*, from whence the Seeds are sent to *England*. This is very hardy, and produces Plenty of Seeds in *England*, but having little Beauty, scarce deserves a Place in Gardens.

The 5th and 6th Sorts are Natives of the *East*, from whence their Roots were brought originally; but have been so greatly improved by Culture, as to render them some of the chief Ornaments of our Gardens in Spring. The principal Colours of these Flowers are Red, White, Purple, and Blue, and some are finely variegated with Red, White, and Purple. There are many intermediate Shades of these Colours; the Flowers are large and very double, and when properly managed are extremely beautiful. I shall therefore proceed to give ample Directions for their Culture, which, if duly observed, the Flowers may be had in Perfection.

Take fresh untried Earth (from a Common or Pasture Land) of a light sandy Loam, or hazel Mould, observing not to take it above ten Inches deep below the Surface; if the Turf be taken with it the better, provided it hath Time to rot thoroughly before it is used: Mix this with a third Part of rotten Cow Dung, and lay it in a Heap, keeping it turned over at least once a Month for eight or ten Months, the better to mix it, and rot the Dung and Turf, and to let it have the Advantages of the free Air: In doing this Work, be careful to rake out all great Stones, and break the Clods (but by no Means sift or screen the Earth, which I have found very hurtful to many Sorts of Roots); for when the Earth is made very fine, upon the first great Rains of Winter or Spring, the small Particles join closely together, and form one solid Mass, so that the Roots often perish for Want of some small Stones to keep the Particles asunder, and make Way for the tender Fibres to draw Nourishment for the Support of the Root.

This Earth should be mixed twelve Months before it is used, if possible; but if you are constrained to use it sooner, you must turn it over the oftener, to mellow and break the Clods; and observe to rake out all the Parts of the green Sward, that are not quite rotten, before you use it, which would be prejudicial to your Roots, if suffered to remain. The Beginning of *September* is a proper Season to prepare the Beds for Planting (which if in a wet Soil, should be raised with this

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Sort of Earth six or eight Inches above the Surface of the Ground, laying at the Bottom some of the Rakings of your Heap to drain off the Moisture; but in a dry Soil, three Inches above the Surface will be sufficient): This Compost should be laid at least two Feet and a Half thick, and in the Bottom there should be about four or five Inches of rotten Neats Dung, or the rotten Dung of an old Melon or Cucumber Bed, so that you must take out the former Soil of the Beds to make Room for it.

And observe in preparing your Beds, to lay them (if in a wet Soil) a little round, to shoot off the Water; but in a dry one, let it be nearer to a Level; in wet Land where the Beds are raised above the Surface, it will be proper to fill up the Paths between them in Winter, either with rotten Tan or Dung, to prevent the Frost from penetrating into the Sides of the Beds, which often destroy their Roots. The Earth should be laid in the Beds a Fortnight or three Weeks before you plant the Roots, that it may settle, and when you plant them, stir the upper Part of the Soil about six Inches deep, with a Spade; then rake it even and smooth, and with a Stick draw Lines each Way of your Bed at six Inches Distance, so that the Whole may be in Squares, that your Roots may be planted regularly: Then with your three Fingers make a Hole in the Center of each Square, about three Inches deep, laying therein a Root with the Eye uppermost; and when you have finished your Bed, with the Head of a Rake draw the Earth smooth, so as to cover the Crown of the Roots about two Inches thick.

The best Season for planting these Roots, if for forward Flowers, is about the latter End of *September*; and for those of a middle Season, any Time in *October*; but observe to perform this Work, if possible, at or near the Time of gentle Showers; for if you should plant them when the Ground is perfectly dry, and no Rain fall for three Weeks or a Month after, the Roots will be very apt to grow mouldy upon the Crown; and if they once get this Distemper, they seldom come to good after.

You may also reserve some of your *Anemone* Roots till after *Christmas*, before you plant them, lest by the Severity of the Winter your early planted Roots should be destroyed, which does sometimes happen in very hard Winters, especially in those Places where they are not covered to protect them from Frost: These late planted Roots will flower a Fortnight or three Weeks after those which were planted in Autumn, and many Times blow equally as fair, especially if it prove a moist Spring, and Care be taken to refresh them with Water.

But then the Increase of these Roots will not be near so great as those of your first Planting, provided they were not hurt in Winter; and it is for this Reason all those who make Sale of these Roots, are forward in planting; for although it may happen, by sharp pinching Frosts in Spring, that their Flowers are not so double and fair as those planted a little later, yet if they can preserve the green Leaves of the Plants from being injured, the Roots will greatly increase in Bulk; but in such Gardens where these Flowers are preserved with Care, there is always Provision made to cover them from the Injuries of the Weather, by arching the Beds over with Hoops, or Frames of Wood, and covering them with Garden Mats or Cloths, in frosty Nights, and bad Weather, especially in Spring when their Buds

begin to appear; for otherwise, if you plant the best and most double Flowers, the black Frosts and cutting Winds in *March* will cause them to blow single, by destroying the Thrum that is in the Middle of the Flower; and this hath occasioned many People who have bought the Roots, to think they were cheated in the Purchase of them, when it was wholly owing to their Neglect of covering them, that their Flowers were single.

In the Beginning of *April* your first planted Roots will begin to flower, which will continue for three Weeks or more, according to the Heat of the Weather, or the Care taken of covering them, during the Heat of the Day, with Mats or Cloths: After these are past flowering, the second planted Sorts will come to succeed them, and these will be followed by those planted in the Spring; so that you may have these Beauties continued for near two Months together, or sometimes longer, if the Season proves favourable, or proper Care is taken to shade them in the Heat of the Day.

Toward the latter End of *May* or the Beginning of *June*, the Leaves of your first blown Roots will begin to decay; soon after which Time you must take them out of the Ground, clearing them from decayed Stalks, and washing them, to take the Earth clean from the Roots; then spread them on a Mat in a dry shady Place till they are perfectly dried, when you may put them up in Bags, and hang them out of the Reach of Mice, or other Vermin, which will destroy them.

Observe also to take up the latter planted Roots as soon as their Leaves decay; for if they are suffered to remain long after in the Ground, and there should fall some Showers of Rain they would soon put forth fresh Fibres, and make new Shoots, when it would be too late to remove them: At the Time when you take up the Roots, is the proper Season for breaking or parting them, which may be done by separating those that you would choose to make all possible Increase from, into as many Parts as you can conveniently, provided each one of them have a good Eye or Bud; but those you intend to blow strong, should by no Means be parted too small, which greatly weakens their Flowering.

The principal Colours in *Anemonies* are, white, Red, Blue, and Purple; and these in some of them, are curiously intermixed; but the most prevailing Colours amongst our *English* raised *Anemonies*, are white and Red; though of late we have received from *France* great Varieties of Blues and Purples, which are very beautiful, and being intermixed with the *English* Flowers, make a fine Variety: We should therefore observe, in planting the Roots, to distribute the different Colours, so as to make an agreeable Mixture of each in every Bed, which will greatly add to their Beauty.

But since all the fine Varieties of these Flowers were first obtained from Seeds, no good Florist, that hath Garden Room, should neglect to sow them; in order to which, we should provide ourselves with a Quantity of good single (or what the Gardeners call Poppy *Anemonies*) of the best Colours, and such as have strong Stems and large Flowers, but especially such as have more Leaves than common, and other good Properties; these should be planted early, that they may have Strength to produce good Seeds, which will be ripe in three Weeks or a Month's Time, after the Flowers are past; when

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when you must carefully gather it, or it will be blown away in a short Time, being inclosed in a downy Subtance. You must preserve this Seed till the Beginning of *August*, when you may either sow it in Pots, Tubs, or a well prepared Bed of light Earth: In doing it you must be careful not to let your Seeds be in Heaps, to avoid which is little understood, and is what I have been informed of by the late Mr. *Obadiab Lowe*, Gardener at *Battersea*, who for several Years raised large Quantities of these Flowers from Seeds: His Manner was thus:

After having levelled the Earth, in which he intended to sow his Seeds, he rubbed them well between his Hands, with a little dry Sand, in order to make them separate the better; then he sowed them as regularly as possible over the Bed; but as these Seeds will still adhere closely together by their Down, he took a strong hair Brush, with which he gently swept over the whole Bed, observing not to brush off the Seeds; this Brush will so separate the Seeds, if carefully managed, as not to leave any entire Lumps; then gently sift some light Earth, about a Quarter of an Inch thick over the Seeds; and, if it should prove hot dry Weather, it will be adviseable to lay some Mats hollow upon the Bed in the Heat of the Day, and now and then give them a little Water, but this must be given gently, lest by hastily watering you wash the Seeds out of the Ground; be sure to uncover the Bed at all Times during gentle Showers, and every Night, that the Seeds may have the Benefit of the Dews; as the Heat of the Weather decreases, you may uncover your Bed in the Day Time.

In about two Months after sowing, your Plants will begin to appear, if the Season has proved favourable, or your Care in Management hath not been wanting, otherwise they many Times remain a whole Year in the Ground. The first Winter after their appearing above Ground, they are subject to Injuries from hard Frosts, or too much Wet, against both of which you must equally defend them; for the Frost is very apt to loosen the Earth, so that the young Plants are often turned out of the Ground, after which a small Frost will destroy them; and too much Wet, often rots their tender Roots, so that all your former Trouble may be lost in a short Time for want of Care in this Particular; nor do I know of any Thing more destructive to these tender Plants, than the cold black Frosts and Winds of *February* and *March*, from which you must be careful to defend them, by placing a low Reed Fence on the North and East Sides of the Bed, which may be moveable, and only fastened to a few Stakes to support it for the present, and may be taken quite away as the Season advances, or removed to the South and West Sides of the Bed, to screen it from the Violence of the Sun, which often impairs these Plants when young.

As the Spring advances, if the Weather proves dry, you must gently refresh them with Water, which will greatly strengthen your Roots; and when the green Leaves are decayed, if your Roots are not too thick to remain in the same Bed another Year, you must clear off all the Weeds, and decayed Leaves, from the Bed, and sift a little more of the same prepared good Earth, about a Quarter of an Inch thick over the Surface; observe to keep them clear from Weeds during the Summer Season, and at *Michaelmas* repeat the same Earthing;

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but as these Roots so left in the Ground, will come up early in Autumn, the Beds should be carefully covered in frosty Weather, or their Leaves will be injured, whereby the Roots will be weakened, if not destroyed. If your Roots succeed well, many of them will flower the second Year, when you may select such as you like, by marking them with a Stick; but you should not destroy any of them until after the third Year, when you have seen them blow strong, at which Time you may judge of their Goodness; for until the Roots have acquired Strength, the Flowers will not shew to Advantage.

By this Time your Roots will be too thick in the Seed Bed to remain, therefore you must, as soon as their green Leaves are decayed, sift the Earth of your Bed through a very fine Sieve, in order to get out the Roots, which can be no otherways found, being small, and so nearly the Colour of the Ground; but in doing this, observe not to disturb the Ground too deep, so as to endanger the burying any of the Roots; for, notwithstanding all your Care, many small Roots will be left behind; therefore, as soon as you have sifted your whole Bed, and taken out all the Roots you can find, level the Earth of your Bed again, and let it remain till next Year, when you will find a plentiful Crop of Roots come up again; the young Roots which you take up must be dried, as was directed for the old ones, but should be planted again three Weeks before them, that they may increase in Strength, so as to flower strongly the next Year.

The single (or Poppy) Anemones will flower most Part of the Winter and Spring, when the Seasons are favourable, if they are planted in a warm Situation, at which Time they make a fine Appearance, therefore deserve a Place in every Flower Garden, especially as they require little Culture; for if these Roots are taken up every third Year, it will be often enough, and when they are taken up, they should be planted again very early in the Autumn, otherwise they will not flower till the Spring. There are some fine blue Colours amongst these single Anemones, which, with the Scarlets, and Reds, make a beautiful Mixture of Colours; and as these begin flowering in *January* or *February*, when the Weather is cold, they will continue a long Time in Beauty, provided the Frost is not too severe. The Seeds of these are ripe by the Middle or End of *May*, and must be gathered daily as it ripens, otherwise it will soon be blown away by the Winds.

The Anemone grows naturally in the *Levant*, particularly in the Islands of the *Archipelago*, where the Borders of their Fields are covered with them of all the Colours, but the Flowers are single, and have been greatly improved by Culture. In *France* they were long cultivated before they were much known in *Holland*, or *England*. *Tournefort* mentions two French Gentlemen, Messrs. *Malvaud* and *Bachelier*, who contributed greatly to the Improvement of these Flowers; and of the latter he relates a pleasant Story, as follows: There was a certain Lawyer to whom Mr. *Bachelier* had refused to communicate the Seeds of his fine Anemones, and finding he could not obtain any either by Friendship or Money, a Fancy came into his Head, to make a Visit to Mr. *Bachelier* with some of his Friends who were in the Secret; he ordered his Lacquey who supported the Train of his Gown, to let it drop on a Bed where the Anemones

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Anemonies grew which he wanted, whose Seeds were then ripe. They walked a considerable Time talking on various Subjects, and when they came to the Spot where the Anemonies grew, a merry Gentleman of the Company began a Story to engage the Attention of Mr. Bachelier, at which Time the Lacquey, who was no Fool, let fall his Master's Train over the Bed, and the Seeds having a downy Covering, stuck to the Gown, which the Boy afterwards took up, and the Company went forward. The Virtuoso took Leave of Mr. Bachelier, and went directly Home, where he carefully picked off the Seeds which had stuck to his Robes, and sowed them, which produced very beautiful Flowers.

ANEMONOIDES. See Anemone.

ANEMONOSPERMOS. See Arctotis.

ANETHUM, Dill.

The Characters are,

It is an umbelliferous Plant, having many Umbels, which have no Involucrum. The Umbels are uniform, and are composed of many smaller ones. The Flowers have five Spear-shaped Petals, each of these have five slender Stamina, crowned with blunt Summits; under the Flower is situated the Germen supporting two small Styles crowned with blunt Stigma, the Germen afterward becomes two compressed Seeds having Borders.

We have but one Species of this Genus, viz.

ANETHUM frutibus compressis. Hort. Cliff. 106. Dill with compressed Seeds. Garden or common Dill.

This Plant is propagated by sowing the Seeds, which should be done in Autumn, soon after they are ripe; for if they are kept out of the Ground till Spring, they frequently miscarry; or if any of the Plants do come up, they often decay before they have perfected their Seeds. They love a light Soil, and will not bear to be transplanted, but must be sown where they are to remain; and must be allowed eight or ten Inches room to grow, otherwise they will draw up very weak, and not produce any lateral Branches, whereby their Leaves will decay, and be rendered useless, nor will they produce so good Seeds; therefore the best Way is, when the Plants are come up, to hoe them out, as is practised for Onions, Carrots, &c. leaving the Plants about eight or ten Inches asunder every Way, observing to keep them clear from Weeds; and when the Seeds begin to be formed, you should cut up those that are intended to be put into the Pickle for Cucumbers, leaving those that are intended for the Use of the Seeds, until they are ripe; at which Time it should be cut, and spread upon a Cloth to dry, and then beat out for Use; if you let the Seeds fall upon the Ground, they will rise the next Spring without any Care.

ANGELICA.

The Characters are,

It is an umbelliferous Plant, the greater Umbel being composed of many small ones, the Involucrum, or Cover, of the large Umbel is composed of five small Leaves, and those of the smaller of eight, and the Empalement of the Flowers are indented in five Parts. The Flowers of the whole Umbel are uniform, each of them consist of five Petals which fall away, these have five Stamina, which are longer than the Petals, and are crowned with single Summits. The Germen is situated below the Flower, supporting two reflexed Styles, crowned with obtuse Stigma, the Germen after-

ward becomes a roundish Fruit splitting into two, and composed of two Seeds, which are plain on one Side and convex on the other, and are bordered.

The Species are,

1. ANGELICA foliorum impari lobato. Flor. Lapp. 101. Angelica with Leaves composed of an unequal Number of Lobes. Common Garden Angelica.

2. ANGELICA altissima foliorum lobatis maximis serratis. Tallest Angelica with Leaves composed of large serrated Lobes.

3. ANGELICA Sylvestris major. Greater wild Angelica.

4. ANGELICA Canadensis atro purpurea. Cornut. Canad. 198. Dark Purple Angelica of Canada.

5. ANGELICA lucida Canadensis. Shining Angelica of Canada.

The 1st Sort is the common Angelica, which is cultivated in the Gardens for medicinal Use, as also for making a sweet Meat, which is by some greatly esteemed. This grows naturally by the Side of Rivers in Lapland, and other northern Countries.

The 2d Sort grows naturally in Hungary, and some Parts of Germany. This has been supposed to be only a Variety of the 1st by many modern Botanists; but from many Years Experience in the Culture of this Plant, I could never observe any Alteration in it; for all the Plants which I raised from Seeds proved exactly the same as the Parent Plant, and when planted in the same Soil with the common Sort, they were twice their Size. The Leaves were also much larger, and deeper sawed on their Edges, the Umbels much larger, and the Flowers were yellow. This Sort seldom continues longer than three or four Years, so that young Plants should be raised to preserve the Species. The Seeds should be sown in Autumn, for those which are sown in the Spring seldom succeed.

The 3d Sort grows naturally in moist Meadows, and by the Sides of Rivers in many Parts of England, so is seldom admitted into Gardens.

The 4th and 5th Sorts grow naturally in North America, from whence their Seeds were sent to Europe, where the Plants are preserved in Gardens for the Sake of Variety; but as they have no Use, and but little Beauty, they are not admitted into many Gardens. They are both very hardy Plants, and may be easily propagated by Seeds, which should be sown in Autumn, and when the Plants are large enough to remove, they must be transplanted into a moist Soil, and have a shady Situation, allowing them two Feet room on every Side. They grow near four Feet high, and put out many Shoots from the Root, especially the second Year from Seed, when they will flower in June, and the Seeds ripen in September. The Roots of these Sorts seldom continue longer than three or four Years.

The common Angelica delights to grow in a very moist Soil, the Seeds should be sown soon after they are ripe; for if they are kept until the Spring, seldom one Seed in Forty will grow. When the Plants are about six Inches high, they should be transplanted at a large Distance; for their Leaves extend very wide; the best Place for this Plant is upon the Sides of Ditches, or Pools of Water, where being planted about three Feet asunder, they will thrive exceedingly. The second Year after sowing, they will shoot up to flower; therefore

if you have a Mind to continue their Roots, you should cut down these Stems in May, which will occasion their putting out Heads from the Sides of the Roots, whereby they may be continued for three or four Years; whereas if they had been permitted to seed, their Roots would perish soon after.

The Gardeners near London, who have Ditches of Water running through their Gardens, do propagate great Quantities of this Plant, for which they have a great Demand from the Confectioners, who make a Sweet-meat with the tender Stalks of it, cut in May.

This Plant is also used in Medicine, as are also the Seeds; therefore where it is cultivated for the Seeds there should be new Plantations annually made to supply the Places of those which die, for when they are permitted to seed, they last but two Years.

ANGUINA. See Tricofanthus.

ANGURIA, the Water Melon, or Citrul.

The Characters are,

It hath male and female Flowers growing separate on the same Plant, the Flowers of both Sexes, are of the open Bell-shaped Kind, of one Leaf, and have Empalements of the same Form. The male Flowers have three short Stamina, which are joined together, these are crowned by slender Summits. The female Flowers rest upon an oval Germen, supporting a cylindrical Style, crowned by three large Stigma, which are gibbous; the Germen afterwards becomes an oblong fleshy Fruit, having five Cells filled with compressed Seeds, which are rounded at their Extremity.

We have but one Species of this Genus, viz.

ANGURIA foliis multifartitis. Water Melon with Leaves cut into many Parts. This is the *Anguria Citrulus dista*. C. B. P. 312. i. e. Water Melon called Citrul. Of this there are several Varieties, which differ in the Form and Colour of their Fruit. But as these vary annually from Seeds, so it is needless to enumerate them.

This Fruit is cultivated in Spain, Portugal, Italy, and most other warm Countries in Europe; also in Africa, Asia, and America; and is by the Inhabitants of those Countries greatly esteemed for their wholesome cooling Quality; in England the Fruit is not so universally esteemed, though some few Persons are very fond of them. I shall therefore give full Directions for raising them, so that such Persons as are willing to be at the Expence and Trouble, may not be at a loss for Instructions.

You must first provide yourself with some Seeds, which should be three or four Years old; for new Seeds are apt to produce vigorous Plants, which are seldom so fruitful as those of a moderate Strength. The best Sorts to cultivate in England, are those with small round Fruit, which come from *African*, those with very large Fruit, seldom ripen in this Climate. Having provided yourself with good Seed, prepare a Quantity of new Dung the Beginning of February, which should be thrown in a Heap for about twelve Days to heat; then you should make a hot Bed for one single Light, for which one good Load of Dung will be sufficient; this Dung should be well wrought in making the Bed, and must be beaten down pretty close with a Dung Fork, that the Heat may not be too violent, and of longer Continuance. When the Dung is thus laid, cover it about four Inches thick with good light Earth, and having spread it very even, put the Frame and Glass over it,

leaving it to warm four or five Days before you sow the Seeds, observing, if the Steam rises pretty much, to raise up the Glass with a Stone, to let it pass off. Then, if you find the Bed in proper Temper, you may sow the Seeds therein in Drills, covering them over with Earth, about Half an Inch. After this, if you find the Bed very warm, you must give Air in the Day Time by raising the Glasses; but if the Bed is cool, you must cover it well with Mats every Night, as also in bad Weather. In four or five Days after, you must prepare another hot Bed to receive these Plants, which will be fit to transplant in ten Days, or a Fortnight at most, after the Seeds are sown; this Bed need not be very large, for a few of these Plants will fill a large Quantity of Frames, when they are planted out for good; and while the Plants are young, there may be a great Quantity kept in one Light; so that those Persons who raise early Cucumbers and Musk Melons, may also raise these Plants in the same Bed; for two or three Lights will be sufficient to raise Plants of all three Kinds, to supply the largest Families, until they are planted out for good. In the Management of these Plants while young, there is little Difference from the Directions given for raising Musk Melons, therefore I need not repeat it here. The chief Thing to be observed, is, to let them have a large Share of Air whenever the Weather will permit, otherwise the Plants will draw up weak, and be good for little. As these Plants will require two or three hot Beds to bring the Fruit to Perfection, it will be the better Way to put the Plants into Baskets, when they have got four Leaves, as is directed for raising early Cucumbers; but you should not Plant more than two Plants in each Basket; for if one of them lives, it will be sufficient; therefore when both the Plants succeed, you should draw out the weakest and most unpromising of them, before they begin to put out their Side Shoots, otherwise they will entangle, and render it difficult to be performed, without greatly injuring the remaining Plant.

The Baskets in which these are to be planted, need not be more than a Foot Diameter, so that one Light will contain Eight of them which will be sufficient for twenty-four Lights, when they are planted out for good; for where the Plants are vigorous, one Plant will spread so far as to fill three Lights; and if they have not Room, they seldom set their Fruit well.

These Baskets may remain in the Nursery Beds, until the Plants have spread; and put out many Runners; for when the Heat of this Bed declines, it is soon revived by adding a proper Lining of warm Dung to the Sides of the Bed quite round; so that when they are taken out of this Bed, and placed in the Ridges where they are to remain, the Heat of the Beds will last so long as to set their Fruit, which is of great Consequence; for when the Plants are ridged out very young, the Beds are generally made of a great Thickness in Dung, in order to continue their Heat; so that for some Time after they are made, they are so extreme hot, as to endanger the scalding of the Plants; and by the Time the Fruit begins to appear, there is little Heat left in the Beds, which often occasions the Fruit to drop off, and come to nothing.

After these Plants are placed in the Beds where they are to remain, you must carefully lead the Shoots as they

they are produced, so as to fill each Part of the Frame, but not to crowd each other; and be careful to keep them clear from Weeds, as also to admit fresh Air whenever the Weather will permit; they must also be frequently watered, but do not give it them in great Quantities. In short, there is little Difference to be observed in the Management of these, from that of Musk Melons, but only to give them more Room, and to keep the Beds to a good Temperature of Heat, and when the Fruit appears, to admit Air freely to the Plants, in order to set their Fruit, but when the Nights are cold, the Glasses must be covered with Mats to keep the Beds warm, without which this Fruit will seldom come to good in this Country.

ANIL. The Indigo Plant.

The Characters are,

It hath a spreading Emplacement of one Leaf, which is indented in five Parts at the Top. The Flower is of the Butterfly Kind. The Standard is open, bordered, and reflexed. The Wings are oblong, blunt, and spread open, as is also the Keel, which turns backwards. There are ten Stamina in the Flower, nine of which are joined, and the other stands separate, these are crowned by roundish Summits. In the Center is situated a cylindrical Germen, supporting a short Style, crowned with an obtuse Stigma. The Germen afterwards becomes a taper Pod, filled with Kidney-shaped Seeds.

The Species are,

1. ANIL *leguminibus arcuatis incanis racemis folio brevioribus caule fruticoso perenni.* Indigo with hoary crooked Pods, Spikes of Flowers shorter than the Leaves, and a shrubby perennial Stalk. *Jamaica wild Indigo.*

2. ANIL *leguminibus sessilibus arcuatis glabris foliis impari pinnatis foliolis ovatis obtusis.* Indigo with smooth arched Pods growing close to the Branches, unequal winged Leaves whose Lobes are blunt and oval. The *Guatemala Indigo.*

3. ANIL *leguminibus teretibus brevibus foliis pinnatis quinifoe, spicis florum longissimis laxis, radice perenne.* Indigo with short round Pods, winged Leaves having five Lobes, very long loose Spikes of Flowers, and a perennial Root. This is the *Carolina wild Indigo.*

4. ANIL *leguminibus pendulis lanatis compressis foliis pinnatis.* Indigo with woolly hanging compressed Pods and winged Leaves.

5. ANIL *leguminibus horizontalibus teretibus foliis pinnatis ternatisque.* Indigo with round horizontal Pods and winged Leaves, having three Lobes.

The 2d, 4th, and 5th Sorts are annual Plants with us; the Seeds of these must be sown on a hot Bed early in the Spring of the Year; and when the Plants are two Inches high, they should be transplanted into small Pots filled with good fresh Earth, and the Pots plunged into a hot Bed of Tanners Bark; when the Plants have obtained some Strength, they must have a great Share of free Air, by raising the Glasses in the Day Time; and in June they may be exposed more to the open Air, by which Time they will begin to produce their Flowers, which will be succeeded by Pods in a short Time after, and in August their Seeds will be perfected, if the Plants are brought forward in the Spring.

The 3d Sort grows to the Height of five or six Feet, and will abide two or three Years, if preserved in a very

warm Stove in Winter; this produces Spikes of Flowers from the Wings of the Leaves on the Sides of the Stems, and sometimes perfects its Seeds in England. This must be raised in a hot Bed, as was directed for the three former, but must not be wholly exposed to the open Air, even in the hottest Weather.

The 2d and 4th Sorts are supposed to be promiscuously used to make the Indigo, but the second is the common Sort which is cultivated in the *English Plantations in America*; but I have been assured by a Person of great Credit, that he has made as good Indigo from the first Sort, as any that was produced in our Plantations; and this being a much larger Plant, will afford a greater Quantity from the same Compass of Ground, than any one of the other Species; this Sort will grow on poorer Land, so may be cultivated in such Places where the 1st Sort will not thrive; by which Means great Improvements may be made with this Plant in our *American Plantations.* The *French* chiefly cultivate the 2d Sort, which is generally called *Guatemala Indigo*; but there are some other Sorts of this Plant, which are Natives of *India*, from which this Commodity is made; two of which, viz. the 4th and 5th Sorts I have had growing in the Garden at *Chelsea*, both which are very different in their Leaves and Pods from either of the *American Sorts.* I have also received Seeds from *India* of the 3d Sort which is the same Species of Indigo which grows naturally in *South Carolina*, and which was greatly esteemed some Years ago by the Indigo Planters of that Country, for the Beauty of the Commodity which it produced; but the Plants being slender and thinly garnished with Leaves, which were small, they did not furnish a Quantity of Indigo, in Proportion to their Bulk, so of late this Sort has not been much cultivated there; though the Account which I received with the Seeds was, that it was what the best Indigo of *India* was made from.

ANISUM, or ANISE. See *Pimpinella.*

ANNONA. L. G. P. *Guanabanus.* Plum. Nov. Gen. 10. The Custard-Apple.

The Characters are,

The Emplacement is composed of three small Heart-shaped Leaves, which are concave and pointed. The Flower hath six Petals, which are three large and three alternately smaller. The Stamina is scarce discernible, but there are many Summits, on each Side the Germen, which is situated at the Bottom of the Flower, having no Style, but an obtuse Stigma. The Germen afterward becomes an oval, or oblong Fruit, having a scaly Rind, and one Cell, in which are lodged many oval smooth Seeds.

The Species are,

1. ANNONA *foliis lanceolatis fructibus ovatis reticulato-areolatis.* Lin. Sp. Plant. 537. *Annona* with Spear-shaped Leaves, and oval Fruit which are netted, or wrought in Squares. The Custard Apple.

2. ANNONA *foliis ovali-lanceolatis glabris nitidis planis pomis muricatis.* Hort. Cliff. 222. *Annona* with plain smooth, shining, oval, Spear-shaped Leaves, and a prickly Fruit. The Sour Sop.

3. ANNONA *foliis oblongis fructibus obtusis subquadratis.* Lin. Sp. Plant. 537. *Annona* with oblong Leaves, and obtuse scaly Fruit. The Sweet Sop.

4. ANNONA *foliis oblongis obtusis glabris, fructu rotundo, cortice glabro.* *Annona* with oblong blunt smooth

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Leaves, and round Fruit, with a smooth Skin. The Water Apple.

5. *ANNONA foliis latissimis glabris, fructu oblongo squamato, seminibus nitidissimis.* *Annona* with very broad smooth Leaves, oblong scaly Fruit, and very shining Seeds. This is called *Cberimolias* by the Spaniards.

6. *ANNONA foliis ovato-lanceolatis pubescentibus fructu glabro subcæruleo.* *Annona* with oval Spear-shaped downy Leaves, and smooth bluish Fruit. The Sweet Apple.

7. *ANNONA foliis lanceolatis glabris nitidis secundum nervos sulcatis.* *H. C. Annona* with neat Spear-shaped Leaves, with nervous Furrows. The Purple Apple.

8. *ANNONA foliis lanceolatis fructibus trifidis.* *Lin. Sp. Plant.* 537. *Annona* with Spear-shaped Leaves, and trifid Fruit. *North American Annona*, or *Papaw*.

The 1st Sort grows to the Height of twenty-five Feet, or upwards, in the *West-Indies*, and is well furnished with Branches on every Side; the Bark is smooth, and of an Ash Colour; the Leaves oblong, pointed, and have several deep transverse Ribs or Veins, and are of a light green Colour; the Fruit is of a conical Form, as large as a Tennis Ball, orange Colour when ripe, having a soft sweet yellowish Pulp, of the Consistence of a Custard, from whence this Name was given to it.

The 2d Sort is not so large as the 1st, rarely rising above twenty Feet high, and not so well furnished with Branches; the Leaves are broader, and have a smooth Surface without any Furrows, and are of a shining green Colour; the Fruit is large, of an oval Shape, irregular, and pointed at the Top, of a greenish yellow Colour, and full of small Knobs on the Outside; the Pulp is soft, white, and of a sour and sweet Taste intermixed, having many oblong dark-coloured Seeds.

The 3d Sort is a Tree of humbler Growth, seldom rising more than twenty Feet high, and is well furnished with Branches on every Side: the Leaves of this Sort have an agreeable Scent when rubbed; the Fruit is roundish and scaly, and when ripe turns of a purple Colour, and hath a sweet Pulp.

The 4th Sort commonly grows from thirty to forty Feet in the *West-Indies*. This hath oblong pointed Leaves, which have some slender Furrows, and when rubbed have a strong Scent; the Fruit of this Sort is seldom eaten but by the Negroes; the Tree grows in moist Places in all the Islands of the *West-Indies*.

The 5th Sort is much cultivated in *Peru*, for the Fruit; and from thence the Seeds have been brought to *England*, and many Plants have been raised. This grows to a very large Tree in its native Country, and is well furnished with Branches, which are garnished with Leaves of a bright green Colour, and much larger than those of any of the other Sorts. The Fruit is oblong, and scaly on the Outside, and of a dark purple Colour when ripe; the Flesh is soft and sweet, has many brown Seeds intermixed, which are very smooth and shining; the Fruit is esteemed by the *Peruvians* as one of their most delicate Sorts. This has produced Flowers in *England*, but no Fruit.

The 6th and 7th Sorts grow in some of the *French Islands*, also in *Cuba*, in great Plenty; and to the Height of thirty Feet or more; their Fruit are esteemed by the Inhabitants of those Islands, who give them to sick Persons, reckoning them very cooling and wholesome.

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The 8th Sort grows plentifully in the *Babama Islands*, where it seldom rises to more than ten Feet high, having several Stems; the Fruit is shaped like a Pear inverted. This is seldom eaten but by the Negroes, and is the Food of *Guanas*, and other Animals.

This Sort will thrive in the open Air in *England*, if planted in a warm sheltered Situation; but the Plants should be trained up in Pots, and sheltered in Winter, for two or three Years, until they have acquired some Strength; then they may be turned out of the Pots in the Spring, and planted in the full Ground, where they are to remain. This Sort has produced Flowers in the curious Garden of his Grace the Duke of *Argyle*, at *Whitton*, near *Hounslow*, where it has been growing in the open Air for some Years, as also in the Nursery of *Mr. Gray*, near *Fulham*. The Seeds are frequently brought to *England* from *North America*; and many Plants have been lately raised in the Gardens near *London*. The Seeds of this Sort are very different in Shape, from any of those I have yet seen brought from the Islands of the *West-Indies*, and the Shape of the Leaves is also different; this casts its Leaves in Autumn, whereas all the others retain their Leaves, never casting them until the Spring, when the new Leaves come out. The Fruit is very different from those of the other Species, two or three growing, joined together at their Foot Stalks. The Seeds of this Sort frequently remain a whole Year in the Ground; therefore the Earth should not be disturbed, where they are sown, if the Plants do not come up the first Year; but the best Way is, to sow the Seeds in Pots, which may be sheltered in Winter; and if they are plunged into a moderate hot Bed in the Spring, the Plants will come up much sooner than in the open Air; so will have more Time to get Strength before Winter.

All the Sorts, which are Natives of the warm Parts of *America*, are too tender to live in this Country, if not preserved in warm Stoves; they come up very easily from the Seeds which are brought from *America*, if they are fresh; but the Seeds must be sown on a good hot Bed, or in Pots of light Earth, and plunged into a hot Bed of *Tanners Bark*. These Seeds should be sown as soon as possible when they arrive, unless it is very late in the Autumn, or in Winter; in which Case they should not be sown till *February*, because if the Seeds receive much Damp in Winter, they will rot; and if the Plants should come up at that Season, it will be very difficult to preserve them till the Spring; so that when these Seeds come to *England*, pretty early in the Spring, it is by much the best Time; because the Plants come up early, and will have Time to get Strength, before the cold Weather comes on in Autumn.

If these Plants are kept in the *Bark Stove*, and carefully managed, they will make great Progress; but in warm Weather they should have Plenty of fresh Air admitted to them; for when the Air is excluded too much, they are apt to grow sickly, and are soon attacked by Vermin, which will multiply and spread over the whole Surface of the Leaves, and cause them to decay; but if the Plants are carefully managed, their Leaves will continue green all the Winter, and make a very good Appearance in the Stove at that Season.

As these Plants advance in their Growth, so they should be shifted into larger Pots, but this must be done with

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with Caution; for nothing is more prejudicial than over potting them. They must constantly remain in the Tan Bed, otherwise they will make but little Progress; for although they will live in a dry Stove, yet they will not thrive, nor will their Leaves appear so fine, as when they are preserved in a vigorous growing State, and it is more for the Beauty of their Leaves, than any Hopes of their producing Fruit in this Country, that they are preserved in Stoves; for though some of the Sorts have produced Flowers in England, yet none have ever shewn their Fruit here.

Some of these Plants are 12 or 14 Feet high in our Gardens, and a few Years ago there were Plants of the 5th Sort in the Garden at Chelsea, more than 20 Feet high, and produced Flowers two or three Years. The Stove in which these Plants are placed, should, during the Winter Season, be kept to the Ananas Heat, marked on the Botanical Thermometers. The Earth should be light and rich, in which they are planted, and the Tan Bed frequently turned over and refreshed. Their Waterings must be frequent in Summer, but not in too great Quantity. In Winter, a little once a Week in open Weather, and, in Frost, once in a Fortnight, or three Weeks, will be sufficient.

ANTHEMIS. Lin. Gen. Plant. 870. *Chamæmelum*. Tourn. Inst. Chamomile.

The Characters are,

It is a Plant with a compound Flower whose common Empalement is hemispherical, and composed of many narrow Scales which are equal. The Border, or Rays of the Flower, is composed of many female Flowers, whose Petals are stretched out like Tongues on one Side, and are indented in three Parts at their Extremity. The Middle, or Disk of the Flower, is composed of many hermaphrodite Florets, which are Funnel-shaped, erect, and cut into five Parts at the Top. These have five short narrow Stamina, which are crowned by cylindrical Summits, which are hollow. The Germen is situated at the Bottom, supporting a slender Style, crowned by two reflexed Stigma, the Germen afterwards becomes an oblong naked Seed. The Female Flowers have no Stamina, but an oblong Germen in the Center supporting two inflexed Styles.

The Species are,

1. ANTHEMIS foliis pinnato-compositis linearibus acutis subvillosis. Lin. Sp. P. 894. Chamomile with winged Leaves, composed of many very narrow pointed Parts, which are hoary. This is the *Chamæmelum nobile* sive *Leucanthemum odoratum*. C. B. P. 135. common or noble Chamomile. There is a Variety of this with double Flowers, which is much propagated in the Gardens, but the Flowers are not so good for Medicine as the single.

2. ANTHEMIS receptaculis conicis paleis setaceis seminibus coronato-marginatis. Flor. Suec. Chamomile with a conical Receptacle, of bristly Chaff, and bordered Seeds. Wild Chamomile, or May Weed.

3. ANTHEMIS receptaculis conicis paleis setaceis seminibus nudis. Lin. Sp. P. Chamomile with a conical Receptacle, bristly Chaff, and naked Seeds. *Chamæmelum fætidum*. C. P. B. Stinking May Weed.

4. ANTHEMIS florum paleis rigidis pungentibus. Flor. Leyd. 172. Chamomile with stiff pungent Chaff between the Flowers.

5. ANTHEMIS erecta foliorum apicibus subspinosis. Lin.

Sp. Plant. 893. Upright Chamomile with Leaves ending with Spines. Spanish Chamomile with a large Flower.

6. ANTHEMIS foliis pinnatis denticulatis carnosis caule ramoso. Lin. Sp. Plant. 893. Chamomile with pinnated Leaves, which are thick and indented, and a branching Stalk. *Chamæmelum maritimum*. Sea Chamomile.

7. ANTHEMIS foliis pinnatifidis obtusis planis, pedunculis hirsutis, foliosis calycibus tomentosis. H. C. Chamomile with plain blunt Leaves, winged at their Extremity, hairy Foot Stalks, and a leafy woolly Empalement. Hoary Sea Chamomile with a thick Wormwood Leaf.

8. ANTHEMIS foliis simplicibus dentato-laciniatis. L. S. P. Chamomile with single indented cut Leaves. Broad leaved Portugal Chamomile, with a Buck's Horn Leaf.

9. ANTHEMIS foliis pinnato-multifidis planis, laciniis linearibus acutis trifidis, pedunculis longissimis. H. C. Chamomile with plain winged multifid Leaves, with very narrow acute Segments, which are trifid, and long Foot Stalks. *Chamæmelum Orientale*. Eastern Chamomile with a Wormwood Leaf.

10. ANTHEMIS foliis simplicibus ovato-lanceolatis repando crenatis. L. S. P. Chamomile with single, oval, Spear-shaped Leaves, which are crenated. Portugal Chamomile with a Maudlin Leaf.

11. ANTHEMIS caulibus unifloris decumbentibus foliis pinnato-multifidis. L. H. C. Chamomile with single Stalks lying on the Ground, terminated by a single Flower, and winged Leaves. Pellitory of Spain.

12. ANTHEMIS caule ramoso foliis pinnato-multifidis setaceis, calycibus villosis pedunculatis. Hort. Cliff. 414. Chamomile with a branching Stalk, multifid winged Leaves which are bristly, and hairy Foot Stalks. Ox Eye with May Weed Leaves. Of this there is a Variety with the Outside of the Rays, of a purple Colour.

13. ANTHEMIS foliis bipinnatis laciniis linearibus integris, pedunculis nudis longissimis. Flor. Leyd. Prod. 171. Chamomile with double winged Leaves, cut into narrow whole Segments, and long naked Stalks. Alpine Ox Eye with a Wormwood Leaf.

14. ANTHEMIS foliis pinnato-compositis linearibus glabris squamis calycis nitidissimis. Chamomile with narrow, compound, winged Leaves, which are smooth, and the Scales of the Empalement very beautiful.

15. ANTHEMIS foliis pinnatifidis linearibus brevibus, radiis longissimis trifidis. Chamomile with narrow short Leaves, which are winged at the Ends, and long trifid Rays.

16. ANTHEMIS foliis bipinnatis serratis subtus tomentosis caule Corymbofo. Lin. Sp. P. 896. Chamomile with double winged Leaves, which are woolly on their under Side, sawed on their Edges, and a Stalk terminated by a Corymbus. Alpine Ox Eye with a white Flower.

17. ANTHEMIS foliis pinnatis acutis serratis subtus tomentosis, pedunculis florum longissimis. Chamomile with winged Leaves, which are sharply sawed, woolly underneath, and very long Foot Stalks to the Flowers. There is a Variety of this with white, and another with Sulphur-coloured Flowers.

18. ANTHEMIS foliis ovatis integris sessilibus floribus umbellatis sparsis. Chamomile with oval entire Leaves growing close to the Stalks, and Flowers in loose Umbels. Eastern Ox Eye with a Leaf of Coastmary.

19. ANTHEMIS erecta foliorum apicibus subspinosis. Lin.

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Lin. Gen. Plant. 893. Upright Chamomile. whose Leaves are terminated with small Spines. White flowering Spanish Chamomile with a large Flower.

20. *ANTHEMIS foliis pinnatifidis laciniatis, pedunculis nudis subvillosis. Hort. Cliff.* 415. Chamomile with cut winged Leaves, and naked hairy Foot Stalks.

21. *ANTHEMIS caule decomposito calycibus ramiferis. Hort. Cliff.* 413. Chamomile with a decompound Stalk, and a branching Empalement. Annual *Asteriscus* with childing Flowers, called by the *Arabs, Craffas*.

22. *ANTHEMIS foliis trinervatis pedunculis terminalibus ramo longioribus. H. C.* Chamomile with Leaves dividing into threes, the Foot Stalks growing at the Extremity, which are longer than the Branches. Leaf creeping Marsh *Chrysanthemum* with a Smallage Leaf.

The 1st Sort is the common Chamomile, which grows in Plenty on Commons, and waste Land. It is a trailing perennial Plant, which puts out Roots from the Branches as they lie on the Ground, whereby it spreads and multiplies greatly; so that whoever is willing to cultivate this Plant, need only procure a few Slips in Spring, and plant them a Foot asunder, that they may have Room to spread, and they will soon cover the Ground. Formerly this Plant was used for planting of Walks, which, when mowed and rolled, looked well for some Time, but being very subject to decay in large Patches, the Walks became unsightly, for which Reason it was disused. The Flowers of this Sort are ordered for Medicinal Use, but the Market People generally sell the double Flowers, which are much larger, but not so strong as the single. The double Sort is equally hardy, and may be propagated in the same Manner.

The 2d Sort is a common annual Weed, which grows among Corn, it flowers in May, so was called May Weed, though some have applied that Title improperly to the *Cotula foetida*, which rarely flowers till late in June. This is the 3d Sort here enumerated, of which there is a Variety with double Flowers, which is preserved by often Planting the Slips and Cuttings, so that although the Plant is naturally an annual, yet by this Method it may be continued, as are the *Chrysanthemums*, and some other annual Plants.

The 4th, 5th, and 8th Sorts are annual Plants, which grow naturally in Spain, Portugal, Italy, and the South of France, from whence their Seeds have been brought to England, where the Plants are preserved in Botanic Gardens for the Sake of Variety. They rise easily from Seeds sown in the Spring, and require no other Culture, but to thin the Plants, where they grow close, allowing them a Foot and a Half room each Way, and clean them from Weeds. They flower in July, and their Seeds ripen in September.

The 6th, 7th, 9th, and 10th Sorts are perennial Plants, these grow naturally in Spain, Portugal, and Greece, from whence their Seeds have been brought to England, and the Plants are preserved in some curious Gardens for the Sake of Variety. They are hardy and may be propagated either by Seeds or Slips, if by Seeds, they should be sown in the Spring upon poor Land, where the Plants will continue much longer than in good Ground. The Slips may be planted during any of the Summer Months, observing to plant them in a shady Border, and water them until they have taken Root. In the Autumn they

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may be removed to the Places where they are to remain, and will require no other Care but to keep them clean from Weeds. These Plants do not grow tall, but are bushy, so should be allowed Room to grow. Their Flowers are white, and continue from July to October, and the Seeds ripen in Autumn.

The 11th Sort is the Pellitory of Spain, the Roots of which are used for the Tooth-ach, being extremely warm; when they are applied to the Part affected, they draw out the cold Rheum, and are often serviceable. This is a perennial Plant, with a long taper Root like a Carrot, which grows naturally in Spain and Portugal, from whence their Roots are brought to England. The Branches of this trail upon the Ground, and spread a Foot or more on every Side, these are garnished with fine winged Leaves, like those of the common Chamomile, at the Extremity of each Branch is produced one large single Flower, like Chamomile but much larger, the Rays of which are of a pure white within, but purple on their outside. After the Flowers are past, the Receptacle swells to a large scaly Cone; between these Scales are lodged the Seeds; it flowers in June and July, and the Seeds ripen in September, but unless the Season is warm and dry, they do not ripen in England, for the Wet falls between the Scales, and rots them in Embryo.

The 12th Sort is the Ox Eye of the Shops; this is an annual Plant, which rises upwards of two Feet high, sending out many lateral Branches, which are garnished with fine winged Leaves, each Branch being terminated by a single Flower, which in some are white, others yellow, and some with naked Heads, having no Rays. These have been by many supposed to be distinct Species, but I have frequently had all the Varieties arise from Seeds of the same Plant. This flowers in July, August, and September, and the Seeds ripen in September and October, and may be treated in the same Manner as the annual Sorts before mentioned.

The 13th Sort is perennial; it branches out on every Side, but doth not rise more than two Feet high, the Leaves are hoary, and have some Resemblance to those of the common Wormwood; the Flowers are white, and like those of the Ox Eye Daisy, standing single upon long Foot Stalks. This Plant begins to flower in June, and continues till the Frost puts a stop to them. It may be propagated either by Seeds or Slips as the perennial Sorts before mentioned, and is equally hardy.

The 14th Sort is an annual Plant, which grows little more than a Foot high, sending out several lateral Branches, which are garnished with smooth narrow winged Leaves, rather finer cut than those of Chamomile; the Flowers grow at the Extremity of the Branches, which are of a deep yellow Colour, and in Size like those of the Corn Marygold; the Empalement of the Flower is composed of many neat silvery Scales. This flowers in August, and the Seeds are ripe in October. I received the Seeds of this Sort from Florence, but do not know the natural Place of its Growth, but it may be sown in an open Bed of light Earth, and requires no more Care than the annual Sorts before mentioned.

The Seeds of the 15th Sort I received from the Cape of good Hope. This is also an annual Plant, which grows little above a Foot high, with an upright Stalk putting out some lateral Branches, which are garnished with

short

short narrow Leaves, divided at their Extremity. The Flowers stand on long Foot Stalks, the Rays are of a bright yellow within, and purple on their Outside; these are long and narrow, the Empalement is composed of silvery Scales: This flowers in July, and will continue to produce Flowers till Winter, when the Roots decay. The Seeds of this Sort should be sown in Autumn in Pots filled with light Earth, and placed under a common Frame in Winter, to protect them from Frost, but they should have free Air in mild Weather; in the Spring the Plants will come up, when they must be inured to the open Air, into which they should be removed as soon as the Danger of hard Frosts is over, and treated as other hardy exotick Plants. By this Method good Seeds may be obtained, whereas those Plants which arise from Seeds sown in the Spring, will not perfect Seeds unless the Season proves warm.

The 16th, 17th and 18th Sorts are perennial Plants. These are propagated by Seeds, which they produce in Plenty; they may be sown on a Bed of common Earth in the Spring, and when the Plants are strong enough to remove, they may be transplanted into large open Borders, near Shrubs, where they may have room to grow, for they spread out on every Side, therefore require three Feet Distance from other Plants; in these large open Spots, they will make a pretty Variety from June to November, during which Time they continue in flower: Some of these are white, others are of a sulphur, and some have yellow Flowers, but these vary from Seed; the Eastern Sorts grow taller, and the Flowers larger than the common, in other Particulars they are the same.

The 19th and 20th Sorts are annual Plants, which grow naturally in Spain, and the Islands of Greece. The 1st Sort hath an upright Stalk two Feet high, sending out many lateral Branches: The Flowers of this are white and large; it flowers in June, and continues till the Frost stops it. The 20th is a low branching Plant, never rising a Foot high, but the Branches extend on every Side to a considerable Distance: The Flowers of this are white, and like those of the common Chamomile, these are hardy, so may be treated in the same Manner as the before mentioned annual Sorts.

The Seeds of the 21st were brought from Africa, by the late Dr. Shaw, and distributed to many curious Botanists in Italy, France, and England, where the Plants were raised. This grows near two Feet high, with an upright Stem, having a single Flower at the Top, from whose Empalement there are two or three Foot Stalks put out horizontally, about two Inches long, each having a single Flower, smaller than the first, like the Childing Marygold, or Hen and Chicken Daisy. The Seeds should be sown in Autumn, and treated as is before directed for the 15th Sort, otherwise the Seeds are seldom perfected in England.

The 22d Sort grows naturally in Jamaica, from whence I received it, with another Sort having larger Leaves: They came up as Weeds in a Tub of Earth brought over with other Plants; it trails its Branches on the Ground, and sends out Roots at every Joint, so that in a short time, it will spread over a large Spot; it is too tender to thrive in England, unless placed in a Stove; this like some other trailing Plants is not very productive of Flowers; these grow single upon long naked Foot Stalks, which are pro-

duced at the Extremity of the Branches, and are of an Orange Colour; it increases fast enough by its trailing Branches, which will root into those Pots which stand near them, so may be taken off and transplanted; it also produces Seeds sometimes, but the other is the quicker Method to propagate it.

ANTHERICUM Lin. Gen. Plant. 380. Pbalangium. Tourn. Inst. Spiderwort.

The Characters are,

The Flower hath no Empalement, and is composed of six oblong blunt Petals, which spread open. It hath six upright Awl-shaped Stamina, which are crowned by small Summits, having four Furrows. The Germen which is situated in the Center is three cornered, supporting a single Style which is as long as the Stamina, and crowned by a three cornered blunt Stigma. The Germen afterward becomes an oval smooth Capsule, having three Furrows, opening in three Cells, which are filled with angular Seeds.

The Species are,

1. ANTHERICUM foliis planis scapo ramofo corollis revolutis. L. S. P. Anthericum with plain Leaves, a branching Stalk, and Flowers turning backward. Asphodel, with rough compressed Leaves and a spreading Stalk.

2. ANTHERICUM foliis planis scapo ramofo corollis planis. Lin. Sp. Plant. 310. Anthericum with plain Leaves, a branching Stalk, and Plain Petals. Branching Spiderwort with a small Flower.

3. ANTHERICUM foliis planis scapo simplicissimo. H. Up. Anthericum with plain Leaves, and a single branchless Stalk. Branchless Spiderwort with a small Flower.

4. ANTHERICUM foliis carnosiss teretibus caule fruticoso. L. S. P. Anthericum with fleshy taper Leaves, and a shrubby Stalk. Cape Spiderwort with Stalks and pulpy Onion Leaves.

5. ANTHERICUM foliis carnosiss subulatis planiusculis. H. U. Anthericum with fleshy plain Awl-shaped Leaves. Low Cape Spiderwort, with Aloe-shaped pulpy Leaves.

6. ANTHERICUM foliis carnosiss subulatis semiteretibus striatis. H. U. Anthericum with Awl-shaped fleshy half taper Leaves, growing close. Low Asphodel, with Awl-shaped succulent Leaves.

7. ANTHERICUM foliis carnosiss subulatis teretibus. H. U. Anthericum, with awl shaped fleshy Leaves, which are taper. Small yellow African Spiderwort, with narrow Leaves.

8. ANTHERICUM acaule foliis carnosiss teretibus spicis florum longissimis laxis. Fig. Plant. pl. 39. Low African Spiderwort with taper fleshy Leaves and very long loose Spikes of Flowers.

9. ANTHERICUM sessile foliis linearibus planis caule decumbente. Fig. Plant. pl. 39. f. 2. Low Spiderwort with narrow plain Leaves and a trailing Stalk.

10. ANTHERICUM foliis ensiformibus filamentis lanatis. Flor. Suec. 268. Anthericum with Sword-shaped Leaves, and downy Stamina. Marsh Yellow Asphodel.

11. ANTHERICUM foliis ensiformibus perianthiis trilobis filamentis glabris. Anthericum with Sword-shaped Leaves, an Empalement with three Lobes and smooth Stamina. Marsh Alpine Spiderwort, with an Iris Leaf.

The 1st Sort grows near two Feet high, the Stalk branches out on every Side; each Branch being terminated by a loose Spike of Flowers, which are white, and the Petals are turned backward to their Foot Stalk. The Leaves.

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Leaves of this Sort are flat, and the Root is perennial, but the Branches decay in Autumn.

The 2d Sort hath a perennial Root, but an annual Stalk, which decays in Autumn; the Stalks rise about the same Height as the former, sending out many lateral ones in like Manner, terminated by loose Spikes of Flowers, which are white, but the Petals are plain, and do not turn back as in the other Sort.

The 3d Sort hath plain Leaves and an unbranching Stalk, in which it chiefly differs from the former. The Root is perennial, but the Stalks decay in Winter.

These three Sorts grow naturally in *Spain, Portugal*, and other warm Countries; they were more common some Years ago in the *English* Gardens, than at present; for the severe Winter in 1740, killed most of their Roots. These flower in *June* and *July*, and their Seeds are ripe in *September*. They are propagated by Seeds which should be sown in Autumn, for those which are sown in the Spring, never come up the same Year, but remain in the Ground till the following Spring, so often miscarry. They should be sown in a Bed of light sandy Earth, in a warm Situation, and when the Plants come up, they must be kept clean from Weeds during the Summer, and in Autumn when their Leaves decay, they should be carefully taken up, and transplanted into a Bed of light Earth, at a Foot Distance from each other. If the Winter should prove severe, the Bed should be covered with Straw, Pease Haulm, or such light Covering, to keep out the Frost, or if some old Tan from a hot Bed is spread over the Ground, it will prevent the Frost from penetrating it, and preserve the Roots. In this Bed they may remain one Year, by which Time they will be strong enough to flower. Therefore the following Autumn they should be carefully taken up, so as not to break their Roots, and planted in the Borders of the Flower Garden, where they will last several Years, if they are not killed by Frost, to prevent which, some rotten Tan should be laid over the Roots in Winter, which will always secure them.

The 4th Sort has been long preserved in many Gardens near *London*, and was formerly known among the Gardeners, by the Title of *Onion leaved Aloe*. This Plant produces many ligneous Branches from the Root, each having a Plant with long taper Leaves, in Shape of those of the Onion, which are full of a yellow Pulp very juicy. These Plants send out Roots, which run down and fasten themselves into the Earth, by which they multiply greatly. The Flowers are produced on long loose Spikes, and are yellow; these appear at different Times, so that the Plants are not long destitute of Flowers. They are succeeded by round smooth Seed Vessels, having three Cells, filled with triangular Seeds; but as the Plant multiplies so fast by Offsets, the Seeds are little regarded. It grows naturally at the *Cape of Good Hope*, and requires a little Shelter in Winter, but in mild Seasons I have had Plants live without any Cover, which were planted close to a warm Wall.

The 5th and 6th Sorts grow close to the Ground never rising with any Stalk. The 5th hath broad, flat, pulpy Leaves resembling those of some Sorts of Aloe, so was formerly by Gardeners called Aloe with Flowers of Spiderwort. The Leaves spread open flat on the Ground, and the Flowers are produced on loose Spikes, like the

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former, but they are shorter. The Flowers are yellow, and appear at different Seasons. This is propagated by Offsets, which are put out in Plenty, and must be planted in Pots filled with light sandy Earth, and in Winter placed in the Green-house, and treated as other hardy succulent Plants, which come from the *Cape of Good Hope*, where this Plant grows naturally. It must be kept pretty dry in Winter, and if screened from Frost, it will require no artificial Warmth.

The 6th Sort hath long narrow pulpy Leaves, which are almost taper, but flattened on their upper Side; this sends out many Offsets, by which it may be increased plentifully. The Flowers are yellow, and grow on long loose Spikes, as the former; these appear at different Seasons; those of the Spring and Summer are succeeded by Seed Vessels in great Plenty, which ripen very well. It must be treated in the same Manner as the former.

The 7th Sort is annual: This is a low Plant growing close to the Ground, having pretty long succulent Leaves, which are taper, but flattened on their upper Side; the Flowers grow in loose spikes, which are shorter than either of the other Sorts. They are yellow, and are succeeded by round Seed Vessels, like those of the former Sorts; the Plants perish soon after their Seeds ripen. The Seeds of this Sort should be sown on a warm Border of light Earth, in *April*, where they are to remain, and when the Plants come up, they will require no other Care but to keep them clean from Weeds, and to thin them where they are too close. This Sort flowers in *July*, and the Seeds ripen in *October*.

The 8th Sort never rises to a Stalk, but the Leaves come out close to the Ground. These are long, taper, succulent, and of a Sea-green Colour, growing erect; the Flower Stems rise between the Leaves, and are near three Feet long. The upper Half being thinly garnished with yellow Flowers, shaped like those of the other Species. These appear at different Seasons, so that the Plants are seldom long destitute of Flowers. This Sort doth not send out Offsets freely, but as it produces Seeds annually, it may be had in Plenty. It must be treated as the 4th, 5th, and 6th Sorts.

The 9th Sort is a Native of *Jamaica*, where it grows naturally in moist Places; this is a very low Plant, having many long narrow Leaves like those of Grass; from between these come out the Flower Stalks, which are five or six Inches in Length, falling to the Ground; at the Top the Flowers are collected into small Heads; these are yellow, and shaped like those of the former. They appear in *June* and *July*, and their Seeds ripen in *August* and *September*. This is tender, so must be placed in a Stove, otherwise the Plants will not live in this Country: It may be easily propagated by Seeds, which should be sown on a hot Bed in Spring, and when the Plants come up must be treated as is directed for other tender exotic Plants from the same Country.

The 10th and 11th Sorts grow naturally on Bogs in most of the Northern Countries, the 10th is common in many Parts of *England*, but particularly in *Lancashire*, from whence it had the Title of *Lancashire Asphodel*, it also grows on a Bog upon *Putney Heath*. The other grows naturally in *Denmark, Sweden, and Lapland*. These are both low Plants, having narrow Leaves, which grow close to the Ground, the Flower Stems rise about six Inches

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Inches high, being terminated by a loose Spike of small yellow Flowers. These differ, the Stamina of the 10th being woolly, whereas those of the other are smooth. These Plants growing naturally on Bogs, are with Difficulty preserved in Gardens.

ANTHERÆ, are the Summits or little Tops in the Middle of a Flower, supported by the Stamina or Chives.

ANTHOLYZA. We have no English Name for this Plant.

The Characters are,

It hath an imbricated Sheath growing alternate, and is permanent; the Flower is of one Leaf, which is tubulous, and opens above with compressed Jaws. The upper Lip is slender, long, erect, and waved; the two Jaws are short, and joined at their Base; the under Lip is trifid, short, and the middle Segment turns downward; it hath three long slender Stamina, two of which are under the upper Lip, and the other lies in the under Lip; these are crowned by pointed Summits. Under the Flower is situated the Germen, supporting a slender Style the Length of the Stamina which is crowned by a slender trifid reflexed Stigma. The Germen becomes a roundish three cornered Vessel having three Cells, in which are many triangular Seeds.

The Species are,

1. ANTHOLYZA *flamine unico declinato*. L. S. P. Antholyza with one Stamen declining. Cornflag with a scarlet Flower, whose upper Lip is erect and fistular.

2. ANTHOLYZA *foliis linearibus sulcatis floribus albis uno versu dispositis*. Fig. Plant. Pl. 40. Strange Cornflag with narrow furrowed Leaves, and white Flowers ranged on one Side of the Stalk.

There has lately been many other Species raised from Seeds which were brought from the Cape of Good Hope, but they have not as yet produced any Flowers in England, so I have not inserted them here.

The 1st Sort hath round red bulbous Roots, from which arise several rough furrowed Leaves, which are near a Foot long, and half an Inch broad; between these comes out the Flower Stem immediately from the Root, which rises two Feet high, is hairy, and hath several Flowers coming out on each Side. These are of one Leaf cut into six unequal Parts at the Top: One of these Segments is stretched out much beyond the other, standing erect; the Margins are waved and closed together wrapping up the three Stamina. These Flowers are red and appear in June, and the Seeds ripen in September.

The Roots of the 2d Sort are in Shape and Size like those of the vernal Crocus, but the outer Skin is thin and white; from this arises five or six long narrow Leaves, which are deeply furrowed. Between these arise the Flower Stem, a Foot and a Half high, bending on one Side toward the Top, where the Flowers come out, ranged on one Side, standing erect. These have each a Spatha or Sheath, of one Leaf, divided into two, ending in Points, and are permanent. The Flower is of one Leaf, having a long Tube, but divided into six unequal Segments at the Top, which spread open, their Margins being waved and turned inward. The three Stamina rise under the upper Segment, which is larger than the others, and below is situated the trifid Style, crowned with purple Stigma. After the Flower is past, the Germen becomes a three cornered Seed Vessel, opening in three Cells, which are filled with triangular Seeds. The Flowers are white, appear in May, and the Seeds ripen in August.

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These Plants are Natives of Africa, from whence their Seeds have been obtained, and were first raised in the Dutch Gardens.

They are propagated by Offsets, which the bulbous Roots send forth in great Plenty; or by Seeds, which are sometimes perfected in Europe. These Seeds should be sown soon after they are ripe; for if they are kept out of the Ground till the following Spring, they often miscarry, and always remain a Year or more in the Ground before they grow. If the Seeds are sown in Pots of light Earth, and plunged into an old Bed of Tan which has lost its Heat, and shaded in the Middle of the Day in hot Weather, the Seeds will come up the following Winter: Therefore they must be kept covered with Glasses to screen them from Cold, otherwise the young Plants will be destroyed. These must remain in the Pots two Years, by which Time they will have Strength enough to be planted each into a separate small Pot filled with light Earth. The Time for transplanting these Roots is in July or August, when their Leaves are decayed. In Summer the Pots may be placed in the open Air, but in Winter they must be removed into a warm Green-house, or placed under a hot Bed Frame, for they are not very tender; but where any Damp arises, it is very apt to occasion a Mouldiness upon their Leaves. The Roots shoot up in Autumn, and the Flowers begin to appear in May; the Seeds ripen in August, and soon after their Leaves and Stalks decay; when the Roots may be taken up, and kept six Weeks or two Months out of the Ground, so may be easily transported from one Country to another at that Time. The Flowers are a great Ornament to the Green-house, and as the Plants require but little Culture so deserve a Place in every good Garden.

ANTHOSPERMUM, Amber Tree, vulgè.

The Characters are,

It is male and female in different Plants; the male Flowers have no Petals, but a coloured Emplacement of one Leaf, which is cut into four Parts almost to the Bottom. Out of the Bottom arise four slender Stamina, crowned with oblong square Summits, having a deep Furrow through their Middle. The female Flowers have the same Structure as the male, but have no Stamina; instead of which, there is an oval Germen, situated in the Bottom, supporting two recurved Styles crowned with a slender Stigma. The Germen afterward becomes a roundish Capsule having four Cells, which contain several angular Seeds.

We know but one Species of this Genus, viz.

ANTHOSPERMUM *mas & fœmina*. Hort. Cliff. 455. Male and female Amber Tree.

This Plant has been long known in curious Gardens under the Title of *Frutex Africanus*, *ambra spirans*, or Amber Tree; by some Ambergris, from the Scent being supposed to be like that of Ambergris.

It is preserved in most curious Gardens, which have Collections of tender Plants, and is easily propagated by planting Cuttings during any of the Summer Months, in a Border of light Earth; which will take Root in six Weeks Time, provided they are watered and shaded: Or if these Cuttings are planted in Pots, and plunged into a very moderate hot Bed, they will take Root sooner, and there will be a greater Certainty of their growing. Then they should be taken up with a Ball of Earth to

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their Roots, and planted into Pots filled with light sandy Earth, and may be exposed to the open Air until *October*; at which Time they should be removed into the Conservatory, where they should be placed as free as possible from being over-hung with other Plants; during the Winter Season, they must be refreshed with Water, but not too much at a Time. You may let them have as much Air as the Weather will permit, for if they are kept too close, they will be subject to grow mouldy, and generally decay soon after; so that if the Green-house is damp, it will be difficult to preserve these Plants through the Winter.

These Shrubs may be trained up either to form round Heads, or Pyramids, being a very manageable Plant; but should not be often cut, for it will occasion the Branches to grow very close, whereby the Air will be excluded from the middle Part of the Plant; which will cause the Leaves to decay, and the Branches to appear very unsightly: But if you suffer it to grow as it is naturally disposed, (only observing to tie up the Stem to make it strait) the Plant will thrive much better.

The Beauty of this Shrub is in its small ever-green Leaves, which grow as close as Heath; and, being bruised between the Fingers, emit a very fragrant Odour. These Plants must be frequently renewed by Cuttings, for the old Plants are very subject to decay, seldom continuing above three or four Years.

It is but of late Years there have been any of the female Plants in the Gardens, for all those which we had formerly were the male, which being propagated by Cuttings have been continued, so that no Seeds were ever produced in England till within a few Years past, when I received some from the *Cape of Good Hope*, from which I raised many Plants of both Sexes, and a few among them which have hermaphrodite Flowers; but these have not as yet produced any Seeds, which may have been occasioned by the coldness of the two last Seasons.

ANTHYLLIS *Lin. Gen. Plant.* Ladies Finger.

The Characters are,

It hath a permanent Empalement of one Leaf, which is swelling, hairy, and divided at the Top into five equal Parts. The Flower is of the Butterfly Kind, having a long Standard reflexed on both Sides beyond the Empalement; the two Wings are short; the Keel is of the same Length, and compressed. There are ten Stamina, which rise together, and are crowned by single Summits. In the Center is situated an oblong Germen, supporting a single Style, crowned by a blunt Stigma: The Germen afterward becomes a small roundish Pod inclosed by the Empalement, having one or two Seeds.

The Species are,

1. ANTHYLLIS *herbacea foliis quaterno-pinnatis floribus lateralibus. H. U.* Herbaceous Kidney Vetch with winged Leaves, having four Lobes, and Flowers growing from the Side of the Stalks. Five leaved Woundwort.

2. ANTHYLLIS *herbacea foliis pinnatis inæqualibus capitulo duplicato. L. S. P.* Kidney Vetch with unequal winged Leaves and double Heads. Low Woundwort with a scarlet Flower.

3. ANTHYLLIS *herbacea foliis pinnatis inæqualibus foliolis caulinis linearis lanceolatis floribus capitatis simplicibus.* Herbaceous Kidney Vetch with unequal winged Leaves, whose Lobes are narrow and Spear-shaped, and single

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Heads of Flowers. Rustick Woundwort; and Ladies Fingers.

4. ANTHYLLIS *herbacea foliis pinnatis æqualibus capitulo terminali. Lin. Sp. Plant.* 719. Herbaceous Woundwort with equal winged Leaves, terminated by the Head of Flowers. Purple Milk Vetch.

5. ANTHYLLIS *herbacea foliis pinnatis inæqualibus capitulis solitariis. Lin. Sp. P.* 719. Herbaceous Woundwort, with unequal winged Leaves and a single Head.

6. ANTHYLLIS *fruticosa foliis pinnatis æqualibus floribus capitatis. Hort. Cliff.* 371. Shrubby Woundwort, with Leaves equally winged and Flowers collected in a Head. *Barba Jovis*, *Jupiter's Beard*, or Silver Bush.

7. ANTHYLLIS *fruticosa foliis ternatis inæqualibus calycibus lanatis lateralibus. L. S. P.* Shrubby Woundwort, with three unequal Leaves, and a downy Flower Cup growing from the Sides. Hoary Cytifus with a longer middle Leaf.

8. ANTHYLLIS *fruticosa spinosa foliis simplicibus. L. S. P.* Shrubby prickly Woundwort with single Leaves. Prickly Broom with Duckmeat Leaves and bluish Purple Flowers.

The 1st Sort grows naturally in *Spain*, *Italy*, and *Sicily*. This is an annual Plant, with trailing Branches, which spread flat on the Ground; the Leaves grow by fours at each Joint, and the Flowers come out in Clusters on the Sides of the Stalks, having large swelling Empalements, out of which the extreme Parts of the Petals do but just appear; these are of a yellow Colour, and are succeeded by short Pods inclosed in the Empalement. It flowers in *June* and *July*, and the Seeds which ripen in *September* should be sown on a Bed of light Earth in *April*, where the Plants are to remain; they require no other Care, but to thin them to the Distance of two Feet, and keep them clean from Weeds.

The 2d Sort grows naturally in *Spain* and *Portugal*, from both which Countries I have received the Seeds; it also grows wild in *Wales*, and the *Isle of Man*. This is a biennial Plant, having single Leaves at Bottom, which are oval and hairy; but those which grow out of the Stalks are winged, each being composed of two or three Pair of Lobes terminated by an odd one: The Flowers grow collected into Heads at the Top of the Stalks, generally double; these are of a bright scarlet Colour, so make a pretty Appearance: It flowers in *June* and *July*, and the Seeds ripen in *October*. When the Plants of this Sort grow on poor Land, they will sometimes continue three Years, but in Gardens they seldom last longer than two.

The 3d Sort grows naturally upon chalky Grounds in many Parts of *England*, so is rarely admitted into Gardens. The Leaves of this Sort are much narrower than those of the former, and have generally one or two Pair of Lobes more in each. The Heads of Flowers in this Species are single, whereas the other has generally double Heads; add to these, the Root being perennial, which makes an essential Difference between them.

The 4th Sort is a perennial Plant with trailing Branches; these are garnished by winged Leaves, which have an equal Number of Lobes, and are hairy; at the Extremity of the Branches, the Flowers are produced in Heads; these are of a purple Colour, and globular Form.

It grows naturally on Mountains, in the South of *France* and *Italy*, from whence I have received the Seeds. It is propagated by Seeds, which may be sown in Autumn: Those which are sown in Autumn, will rise the following Spring, and more certainly grow, than those which are sown in Spring, which seldom grow the same Year. When the Plants come up, they must be kept clean from Weeds; and where they are too close together, they must be thinned. The following Autumn, they should be transplanted to the Places where they are to remain, and will require no particular Management afterward. This Sort flowers in *June* and *July*, and the Seeds ripen in *October*.

The 5th Sort approaches near to the 3d, but the Leaves are hoary, and the Flowers are produced on the Side of the Branches; these are yellow, and collected into small Heads. It is an annual, or at most a biennial Plant; for when it flowers early in the Summer, it commonly decays soon after the Seeds are ripe; whereas those Plants which flower later in the Season, and do not perfect Seeds, will abide another Year. This may be propagated by Seeds as the former.

The 6th Sort is the *Barba Jovis*, or *Jupiter's Beard*, by many called Silver Bush, from the Whiteness of its Leaves. This is a Shrub which often grows ten or twelve Feet high, and divides into many lateral Branches, which are garnished with winged Leaves, composed of an equal Number of narrow Lobes, which are very white and hairy; the Flowers are produced at the Extremity of the Branches, collected into small Heads; these are of a bright yellow Colour, and appear in *June*; sometimes they are succeeded by short woolly Pods, containing two or three Kidney-shaped Seeds; but unless the Season proves warm, they do not ripen in this Country. It is propagated either by Seeds or Cuttings; if by Seeds, they should be sown in Autumn, in Pots filled with light Earth, and placed under a Frame in Winter to protect them from Frost. The following Spring the Plants will rise, and when strong enough to remove, should be each planted in a small Pot filled with light Earth, and placed in the Shade, till they have taken new Root; after which, they may be placed with other hardy exotic Plants, in a shady Situation, till *October*, when they must be removed into Shelter. These Plants are always housed in Winter, yet I have had some of them live abroad three or four Years, which were planted against a South-west aspect Wall. It may also be propagated by Cuttings, which may be planted during any of the Summer Months, observing to water and shade them until they have taken Root. When the Cuttings have taken good Root, they should be planted in Pots, and treated in the same Manner as the former.

The 7th Sort is a low Shrub seldom rising above two Feet high, but sends out many slender Branches; these are garnished with hoary Leaves, which are sometimes single, but generally have three oval Lobes, the Middle being longer than the other two; the Flowers are white, and come out from the Side of the Branches, three or four joined together having woolly Empalements, but are rarely succeeded by Seeds in *England*. It may be propagated by Cuttings or Seeds, in the same Manner as the former Sort. This hath been an old Inhabitant in the *English* Gardens.

The 8th Sort grows naturally in *Spain* and *Portugal*, from whence I have received the Seeds. This is a Shrub which grows nine or ten Feet high, having the Appearance of one Sort of *Gorse* or *Whin*, but it hath round Leaves growing single. It will live in the open Air in mild Winters, but hard Frost will destroy it. It is propagated by Seeds only.

ANTIRRHINUM. Snap-dragon, or Calves-snout.

The Characters are,

The Empalement is of one Leaf, cut into five Parts, the two upper Segments being longer than the lower. The Flower is ringent, having an oblong Tube, and divided at the Top into two Lips, which are closed at the Jaw. The upper Lip is cut into two, and reflexed on each Side; the under Lip is divided into three obtuse Parts: In the Bottom is situated an obtuse Nectarium, which is not prominent. There are four Stamina which are included in the upper Lip, two being longer, and two shorter; these are crowned by short Summits. In the Center is placed a roundish Germen, supporting a single Style, crowned with an obtuse Stigma. The Germen afterward becomes a round obtuse Capsule having two Cells, which are full of small angular Seeds.

The Species are,

1. ANTIRRHINUM foliis lanceolatis obtusis alternis caule ramosissimo diffuso. Hort. Cliff. Snap-dragon with obtuse Spear-shaped Leaves growing alternate, and a diffused branching Stalk. The least Field Snap-dragon.

2. ANTIRRHINUM foliis lanceolatis petiolatis calycibus corollâ longioribus. Snap-dragon with Spear-shaped Leaves having Foot Stalks, and the Empalement longer than the Flower. Greater Field Snap-dragon.

3. ANTIRRHINUM foliis lanceolatis petiolatis calycibus brevissimis racemo terminali. Vir. Cliff. 61. Snap-dragon with Spear-shaped Leaves having Foot Stalks, very short Flower Cups, and terminated by a Spike of Flowers. Great Snap-dragon with a longer Leaf.

4. ANTIRRHINUM foliis lanceolatis glabris, calycibus brevissimis racemo longissimo. Snap-dragon with smooth Spear-shaped Leaves, hairy Flower Cups, and a very long Spike of Flowers. Broad leaved Snap-dragon with a large pale Flower.

5. ANTIRRHINUM foliis lineari-lanceolatis brevissimis racemo brevioribus. Snap-dragon with narrow hairy Spear-shaped Leaves, and a shorter Spike. Greater Italian long leaved Snap-dragon with a large snowy Flower.

6. ANTIRRHINUM foliis linearibus floribus petiolatis axillaribus. Snap-dragon with narrow Leaves and Flowers, with Foot Stalks proceeding from the Wings of the Leaves. Sicilian Snap-dragon with a Toad-flax Leaf and a Snow white Flower.

The two 1st Sorts grow naturally on arable Land in many Parts of *England*, so are seldom admitted into Gardens; these are both annual Plants, which come up from scattered Seeds. They flower in *June* and *July*, and their Seeds are ripe in *September*.

The 3d Sort is not a Native of *England*, but having been first brought into Gardens, the Seeds have scattered about in great Plenty, so that it is become very common upon Walls and old Buildings in many Parts of *England*. Of this Sort there are several Varieties, which differ in the Colour of their Flowers, some being red with white Mouths, some with yellow Mouths, others have white Flowers with yellow and white Mouths. There is also

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one with striped Leaves. The last is propagated by Slips and Cuttings, which readily take Root any Time in the Spring or Summer. The different Colours of the Flowers are variable from Seeds.

The 4th Sort grows naturally in the Islands of the *Archipelago*, from whence I received the Seeds. The Leaves of this are much broader, the Flowers much larger, and the Spikes longer, than in any of the other Sorts. The Colours of the Flowers are as changeable in this as the former, when raised from Seeds; but as this is the most specious Kind, so it better deserves propagating than the common, especially as it is equally hardy.

The 5th Sort hath long narrow hairy Leaves; the Flowers are large, and the Spike is shorter than the former; there are some Varieties in the Colour of the Flowers, and it is equally hardy with the common Sort.

The 6th Sort is an annual Plant, which seldom grows more than a Foot high; the Leaves of this are very narrow and smooth: the Flowers come out from the Wings of the Leaves single, standing on long Foot Stalks; these are very white, with a dark Bottom. If the Seeds of this Sort are permitted to scatter, the Plants will come up, and require no other Care but to thin them and keep them clean from Weeds.

The 3d, 4th, and 5th Sorts are raised from Seeds, which should be sown in a dry Soil, which is not too rich, either in *April* or *May*; and in *July* the Plants may be planted out into large Borders, where they will flower the Spring following; or they may be sown early in the Spring, for flowering the same Autumn, but then they are not so likely to endure the Winter; and if the Autumn proves bad, they will not perfect their Seeds.

These Plants grow extremely well upon old Walls or Buildings, in which Places they will endure for several Years; whereas those planted in Gardens seldom last longer than two Years, unless they are planted in a very poor Soil, and the Flowers often cropped, and not suffered to seed; but any of these Sorts may be continued, by planting Cuttings in any of the Summer Months, which will easily take Root.

All the Sorts of Snap-dragons are pretty Ornaments in a Garden, and requiring very little Culture are rendered more acceptable. They are all hardy Plants, and will resist the Cold of our Winters extremely well, especially if they are planted on a dry, gravelly, or sandy Soil; for when they are planted in a rich moist Soil, they will grow very luxuriant for a Time, but are very subject to Rot in Autumn or Winter; and are much more susceptible of Cold, than when they are in a dry, hungry, rocky Soil; so that these Plants may be placed amongst Stones, or they will grow in the Joints of old Walls, where they may be placed so as to render some abject Parts of a Garden very agreeable, for they will continue in flower several Months; and if the Seeds are permitted to shed, there will be a continual Supply of young Plants, without any Trouble.

Wherever these Plants are designed to grow on Walls, or on a rocky barren Soil, the Seeds should be sown the Beginning of *March*, where they are designed to remain (for if the Plants are first raised in a better Soil, and afterward transplanted into those Places, they seldom succeed well). When the Plants are come up, they will require no other Culture but to keep them clear from

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Weeds; and where they come up too thick, to pull some of them out, so as to give them Room to grow. In *July* these Sorts will begin to flower, and will continue flowering till the Frost prevents them. Those Plants which grow on Walls, will have strong woody Stems, which will continue two or three Years or more, and are rarely hurt by Frost.

APARINE. Goose-grafs or Clivers.

The common Sort grows wild every where, the Seeds sticking to the Cloaths of People that pass by where they grow: It is sometimes used in Medicine, but is too common a Weed to be admitted into a Garden.

There are some other Sorts of this Plant which are kept in Botanic Gardens for the Sake of Variety, which I shall beg Leave to enumerate here.

1. APARINE *semine levi*. Tourn. Goose-grafs with a smooth Seed. This is under *Gallium* in *Linnaeus*.

2. APARINE *semine coriandri saccharati*. Park. Theat. Goose-grafs with sweet Seeds like Coriander.

3. APARINE *pumila supina, flore caeruleo*. Tourn. Low trailing Goose-grafs, with a blue Flower. This is the *Vaillantia* of *Linnaeus*.

All these Plants, if they are permitted to scatter their Seeds will maintain themselves in a Garden without any other Culture, than that of preventing other Weeds from over-growing them, these being all very low Plants.

The 1st Sort grows wild in *Cambridgeshire*, as doth the 3d about *Lipboeck* in *Hampshire*, where I have gathered it.

APHACA, Vetchling.

The Characters are,

The Empalement is of one Leaf, slightly indented at the Top in five Parts. The Flower is of the Butterfly Kind, the Standard being large and Heart-shaped, the Wings are shorter and obtuse; the Keel is the Length of the Wings, and divided slightly in the Middle. It hath ten Stamens, nine joined and one single; these are crowned by round Summits. In the Center is placed an oval Germen, supporting a single Style, crowned by a hairy Stigma. The Germen afterward becomes a short Pod, containing two or three round Seeds. To which we must add, that it hath only two roundish Leaves growing at each Joint, from between which proceeds the Tendril.

We have but one Species of this Plant, viz.

APHACA. Lob. Icon. 70. Yellow Vetchling. The Figure of this is exhibited in the 8th Number of Plants.

This Plant is found wild in divers Parts of *England*, on arable Land, but is seldom preserved in Gardens. It is an annual Plant, which perishes soon after the Seeds are perfected. The surest Method to cultivate this Plant, is to sow the Seeds on a Bed of light Earth in Autumn, soon after they are ripe. These Seeds should be sown where the Plants are designed to remain, for they seldom succeed well if they are transplanted. All the Culture these Plants require, is to keep them clear from Weeds, and to thin them where they come up too close, leaving them about ten Inches or a Foot asunder.

APIOS. See Glycine.

APIUM. Parsley.

The Characters are,

It is a Plant with an umbelliferous Flower; the Rays of the

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the great Umbel are few, but those of the smaller are many; the Involucrum is in some Species of one Leaf, and in others of many; the Petals of the greater Umbel are uniform; these are round, equal, and turn inward. Each Flower has five Stamina, which are crowned by roundish Summits. Under the Flower is situated the Germen, supporting two reflexed Styles, which are crowned by blunt Stigma; the Germen afterward becomes an oval channeled Fruit, dividing into two Parts, having two oval Seeds channeled on one Side, and plain on the other.

The Species are,

1. *APIUM foliolis caulinis linearibus*. Hort. Cliff. 108. Parsley with very narrow Leaves on the Flower Stems. This is the *Apium hortense*. Common Parsley.

2. *APIUM foliis radicalibus amplioribus crispis caulinis ovato-multifidis*. Parsley with the lower Leaves very broad and curled, the upper oval, and cut into many Segments. Curled Parsley.

3. *APIUM foliis radicalibus trifidis, serratis petiolis longissimis*. Parsley with under Leaves divided into three Parts, which are sawed, and have very long Foot Stalks. The large rooted Parsley.

4. *APIUM foliolis caulinis cuneiformibus*. Hort. Cliff. 107. Parsley with the lower Leaves fashioned like a Wedge. Smallege or Water Parsley.

5. *APIUM foliis erectis, petiolis longissimis foliolis quinque lobatis serratis*. Parsley with upright Leaves, very long Foot Stalks, and the smaller Leaves composed of five Lobes which are sawed. Upright Italian Celery.

6. *APIUM foliis patulis, petiolis brevibus, foliolis quinque serratis, radice rotundo*. Parsley with spreading Leaves, short Foot Stalks, the smaller Leaves of five Parts, and a round Root. Celeriac or Turnep-rooted Celery.

7. *APIUM foliis radicalibus trilobatis, caulinis quinque lobatis crenatis*. Parsley with under Leaves having three Lobes, and those on the Stalks five Lobes, which are indented. Greatest Portugal Parsley, with a Leaf having three Lobes and a yellowish Flower.

The 1st Sort is the common Parsley, which is generally cultivated for culinary Use; and is what the College of Physicians have directed to be used in Medicine, under the Title of *Petrofelinum*; for when *Apium* is prescribed, the smallege is always intended.

The 2d Sort has generally been supposed to be only a Variety of the 1st, but from many Years Trial I have always found, that if the Seeds are carefully saved from Plants of the curled leaved Parsley, it will constantly produce the same; there are few Persons who will be at the Trouble to save the Seeds so carefully, as not to have some of the common Sort mixed with it; for when Seeds are bought at the Shops, there is generally a Mixture of both: The only Method to have it good, is to separate all those Plants which have plain Leaves from the curled, as soon as they are distinguishable, leaving only the right Kind; if this be duly observed, the Seeds will constantly produce the same.

The 3d Sort is chiefly cultivated for their Roots, which are now commonly sold in the London Markets; the Leaves of this Sort have much longer Foot Stalks, and the Subdivisions are not so numerous as in the common Parsley; the Lobes of the Leaves are much larger, and of a darker Green, so that it is easily distinguished from the common Sort by its Leaves, but the Roots are six

Times as large as the common Parsley can be brought to with the utmost Culture. I have sown the Seeds of both Sorts for several Years on the same Spot of Ground, and have thinned the Plants when young, to an equal Distance, and given the same Culture to both; but when their Roots were taken up, those of the common Sort were not larger than a Man's Finger, but the other were as large as full grown Carrots, and were very tender and sweet, whereas the other were stringy and strong; and this Difference constantly holds, so it may be allowed to be specifically different. This Sort was many Years cultivated in Holland, before the English Gardeners could be prevailed on to sow it. I brought the Seeds of it from thence in 1727, and would then have persuaded some of the Kitchen Gardeners to make Trial of it, but they refused to accept of it, so that I cultivated it for several Years before it was known in the Markets.

The 4th Sort is commonly known by the Title of Smallege. This is what the Physicians intend when they prescribe *Apium*.

The 5th Sort is the Celery, and the 6th Sort was supposed to be a degenerate Species from it, but I cannot agree to this opinion; for from many Years Trial, I have never found it vary. The Leaves of this Sort are short, when compared with those of the other, and spread open horizontally, and the Roots grow as large as common Turneps. All the Difference which I have observed to arise from the Culture, has been only in the Size of the Roots, those on rich Ground, which were properly cultivated were much larger than those on poorer Land, but the Leaves and outward Appearance of the Plants were never altered, so that I make no Doubt of its being a different Species.

The Seeds of the 7th Sort I received from the Royal Garden at Paris, many Years since, where it had been long preserved, and maintained its Difference; and from near twenty Years cultivating it in the Garden at Chelsea, I have found the same, so that I cannot doubt of its being different from all the other Species.

The broad-leaved Garden Parsley, mentioned by Caspar Baubin, and the round-leaved Portugal Parsley, mentioned by Tournefort, I believe are only Varieties of the common Parsley; for if they are distinct Species, all the Seeds which I have received from different Parts of Europe, under those Titles, have been wrong, for the Plants which have risen from those Seeds, have always proved to be the common Sort.

The common Parsley must be sown early in the Spring; and the Plants seldom appear in less than six Weeks after the Seeds are sown. This Sort is generally sown in Drills by the Edges of Borders in the Kitchen Gardens near London, because it is much easier to keep it clear from Weeds, than if the Seeds are sown promiscuously on a Border, and the Parsley is much sooner cut for Use: But when the Roots are desired for medicinal Use, then the Seeds must be sown thin; and when the Plants come up, they should be hoed out single, as is practised for Carrots, Onions, &c. observing also to cut up the Weeds; the Roots will be fit for Use in July or August.

There are some Persons who are afraid to use Parsley in their Kitchens, lest they should suffer by having the lesser Hemlock mixed with it, whose Leaves are so like Parsley,

Parsley, that Persons not skilled in Botany, may be easily deceived; and that being a noxious plant, several Persons have been injured by eating it: To prevent this, I have for many Years cultivated the Sort with curled Leaves, which is so unlike the Hemlock, that none, however ignorant, can mistake one for the other, and have constantly advised those of my Acquaintance to do the same; for the curled Sort is equally good, and I have constantly found the Seeds, saved from it, to produce the same.

The common Parsley is by some skilful Persons, cultivated in Fields for the use of Sheep, it being a sovereign Remedy to preserve them from the Rot, provided they are fed twice a Week for two or three Hours each time with this Herb; but Hares and Rabbits are so fond of it, that they will come from a great Distance to feed upon it; and in Countries where they abound, will destroy it, if it is not very securely fenced against them; so that whoever has a Mind to have Plenty of Hares in their Fields, by cultivating Parsley, will draw all the Hares of the Country to them.

The best Time for sowing it in the Fields is about the Middle or latter End of *February*; the Ground should be made fine, and the Seeds sown pretty thick, in Drills drawn at about a Foot asunder, that the Ground may be hoed between the Drills, to destroy the Weeds, which, if permitted to grow, will soon over-run the Parsley. Two Bushels of Seed will sow one acre of Land.

The great Garden Parsley is now more known to us in *England* than it was some Years ago: In *Holland* it has been long very common in all their Markets: They bring these Roots in Bunches, as we do young Carrots, to Market, in Summer; and the Roots are much of the same Size: It is called *Petroseline Wortle* by the *Dutch*, who are very fond of it for *Water Souche*.

It may be cultivated by sowing the Seeds in good Ground early in Spring; and in *April*, when the Plants are up, cut them out with a Hoe (as is practised for young Carrots) to about five or six Inches square, and keep them constantly clean from Weeds, in *July* the Roots will be fit to draw for Use, and may be boiled and eaten as young Carrots; they are palatable and wholesome, especially for those troubled with the Gravel.

If these Plants are cut out, to allow them more Room, in a good Soil, the Roots will grow to the Size of a middling Parsnep, by *September*.

Smallage is a common Weed, by the Side of Ditches, and Brooks of Water, so that it is seldom cultivated in Gardens; but if any Person is willing to propagate it, the Seeds should be sown soon after they are ripe, on a moist Spot of Ground; and when the Plants come up, they may be either transplanted into a moist Soil, or hoed out, and left six or eight Inches asunder, where they may remain. The Seed of this Plant is one of the lesser warm Seeds, and both that and the Herb are used in Medicine.

The Seeds of the two Sorts of Celery should be sown at two or three different Times, the better to continue it for Use through the whole Season without running up to Seed. The first Sowing should be in the Beginning of *March*, upon a gentle hot Bed; the second may be a Fortnight after, which ought to be in an open Spot of light Earth, where it may enjoy the Benefit of the Sun;

the third Time of Sowing should be the Middle of *April* which ought to be in a moist Soil; and if exposed to the Morning Sun only, it will be so much the better; but it should not be under the Drip of Trees.

There should also be another Sowing about the Beginning of *May*, because those Plants which come from the former Sowings will be apt to pipe soon after *Christmas*; whereas these will remain good as long as the Weather continues cool in the Spring; and if the Ground is rich where it is planted, the Plants will rise to a great Height, and be very tender and good.

The Seeds which are sown on the hot Bed will come up in about three Weeks time after Sowing, when you must carefully clear it from Weeds; and if the Season prove dry, you must frequently water it; in about a Month or five weeks after it is up, the Plants will be fit to transplant: You must therefore prepare some Beds of moist rich Earth, in a warm Situation, in which you should prick these young Plants, at about three Inches square, that they may grow strong; and if the Season should prove cold, the Beds must be covered with Mats, to screen the Plants from Morning Frosts, which would retard their Growth: You must also observe, in drawing these Plants out of the Seed Beds, to thin them where they grow too thick, leaving the small Plants to get more Strength before they are transplanted, by which Means one and the same Seed Bed will afford three different Plantings, which will succeed each other for Use.

Observe, if the Season proves dry, to keep it diligently watered, after it is transplanted, also to clear the Seed Beds from Weeds; and after every Drawing, keep them duly watered, to encourage the small Plants left therein.

The Middle of *May* some of the Plants of the first Sowing will be fit to transplant for Blanching; which should be planted in a moist rich light Soil, upon which this first planted Celery will often grow to be twenty Inches long in the clean blanched Parts, which upon a poor or dry Soil seldom rises to ten Inches.

The Manner of transplanting it is as follows: Having cleared the Ground of Weeds, you must dig a Trench by a Line about ten Inches wide, and eight or nine Inches deep, loosening the Earth in the Bottom, and laying it level; and the Earth that comes out of the Trench should be equally laid on each Side the Trench, to be ready to draw in again to earth the Celery as it advances in Height. These Trenches should be made at three Feet Distance from each other; then Place your Plants in the Middle of the Trench, at five or six Inches Distance, in one strait Row, having before trimmed the Plants, and cut off the Tops of the long Leaves; as they are planted you must observe to close the Earth well to their Roots, and water them plentifully until they have taken fresh Root; after which Time it will be needless, except in dry Soils, or very dry Seasons: As those Plants advance in Height, observe to draw the Earth on each Side close to them, being careful not to bury their Hearts, nor ever to do it but in dry Weather, otherwise the Plants will rot.

When your Plants have advanced a considerable Height above the Trenches, and all the Earth, which was laid on the Sides thereof, hath been employed in earthing them up: you must then make use of a Spade to dig up the Earth between the Trenches, which must also be made

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made use of for the same Purpose, continuing from time to time to earth it up, until it is fit for Use.

The first of your planting out will, perhaps, be fit for Use by the Beginning of July, and will be succeeded by the after Plantations, and if the latter Sowings are rightly managed, there will be a Succession of it till April; but you should observe, after the second or third Planting out, to plant the last Crop in a drier Soil, to prevent its being rotted with too much wet in Winter; and also, if the Weather should prove extreme sharp, you will do well to cover your Ridges of Celery with some Pease-haulm, or such light Covering, which will admit the Air to the Plants; for if they are covered too close, they will be very subject to rot; by this means you may preserve your Celery in Season a long time; but you must remember to take off the Covering whenever the Weather will permit, otherwise it will be apt to cause the Celery to pipe, and run to Seed. By this Method of covering the Celery, the Frost will be kept out of the Ground, so it may be always taken up for Use when it is wanted, which, if neglected, it cannot be taken up in hard Frost. The Celery, when fully-blanced, will not continue good above three Weeks or a Month before it will rot or pipe: Therefore, in order to continue it good, you should have, at least, six or seven different Seasons of Planting; so that if it be only intended to supply a Family, there need not be much planted at each time; but this must be proportioned according to the Quantity required.

The other Sort of Celery, commonly called *Celeriac*, is to be managed in the same Manner as is directed for the Italian Celery, excepting that this should be planted in very shallow Drills; for this Plant seldom grows above eight or ten Inches high, so requires but little earthing up; the great Excellency of this is in the Size of the Root, which is often as large as ordinary Turneps. It should be sown about the Middle of March, on a rich Border of Earth; and, in dry Weather, constantly watered, otherwise the Seeds will not grow: When the Plants are large enough to transplant out, they should be placed eighteen Inches asunder, Row from Row, and the Plants six or eight Inches distant in the Rows: the Ground must be carefully kept clean from Weeds; this Sort will require but one Earthing up, which should not be performed until the Roots are nearly grown: Both these Sorts of Celery delight in a rich light moist Soil, where they grow to a much larger Size, and will be sweeter and tenderer than on poor or dry Ground.

The best Method to save this Seed, is to make choice of some long good Roots of the upright Celery, which have not been too much blanced, and plant them out at about a Foot asunder in a moist Soil, early in the Spring; and when they run up to Seed, keep them supported with Stakes, to prevent their being broken with the Wind: In July, when the Seed begins to be formed; if the Season should prove very dry, give some Water to the Plants, which will greatly help their producing good Seeds. In August the Seeds will be ripe, at which Time it should be cut up, in a dry Time, and spread upon Cloths in the Sun to dry; then beat out the Seeds, and preserve it dry in Bags for Use.

APIUM MACEDONICUM. See Bubon.

APIUM ANISUM DICTUM. See Pimpinella.

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APIUM PYRENAICUM. See Crithmum.

APOCYNUM. Lin. Gen. Plant. Dogbane.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, cut into five acute Segments at the Top; it hath but one Petal, which is of the open Bell Shape, and cut into five Parts at the Brim, which turn backward; in the Bottom of the Flower are situated five Nectariums, which are oval, and surround the Germen: There are five Stamina, scarce visible, which are crowned by oblong erect Summits, which are bifid; in the Center are two oval Germen, supporting small Styles, crowned with globular Stigma, larger than the Germen. The Germen afterward becomes two long pointed Capsules, opening in two Valves, having one Cell, which is filled with compressed Seeds, lying over each other like Tiles on a House, each being crowned with Down.

The Species are,

1. APOCYNUM caule reclinato herbaceo foliis ovatis utrinque glabris cymis terminalibus. Lin. Sp. Plant. 213. Dogbane with an erect herbaceous Stalk, oval Leaves, smooth on both Sides, and terminated by a Head of Flowers. Canada Dogbane with greater Tutstan Leaves.
2. APOCYNUM caule reclinato herbaceo foliis oblongis cymis lateralibus. Lin. Sp. Plant. 213. Dogbane with an erect herbaceous Stalk, oblong Leaves, and Heads of Flowers on the Side of the Branches. Greatest Canada Dogbane with the least herbaceous Flower.
3. APOCYNUM caule reclinato herbaceo foliis ovato-lanceolatis. P. L. Dogbane with an upright herbaceous Stalk, and oval Spear-shaped Leaves. Venetian maritime Dogbane with a Willow Leaf and a purple Flower.
4. APOCYNUM foliis ovatis petiolatis, superne glabris, floribus amplis pediculis longis bifutis caule fruticoso. Dogbane with oval Leaves, which are smooth on their upper Side, large Flowers with long hairy Foot Stalks, and a shrubby Stalk. Shrubby upright Dogbane with a very large and beautiful yellow Flower.
5. APOCYNUM foliis oblongo-cordatis rigidis floribus lateralibus, caule fruticoso volubili. Dogbane with stiff oblong Heart-shaped Leaves, Flowers growing on the Sides of the Stalk, and a shrubby twining Stalk. Climbing Dogbane with a Citron Leaf and spotted Pods.
6. APOCYNUM caule erecto frutescente foliis lanceolato-ovalibus corollis acutis fauce villosis. Flor. Zeyl. Dogbane with an upright shrubby Stalk, oval Spear-shaped Leaves, acute Flower Leaves, and hairy Jaws. Dogbane with an upright woody Stalk, and oval pointed Leaves.
7. APOCYNUM caule volubili perenne foliis ovatis venosis. Prod. Leyd. 412. Dogbane with a perennial twining Stalk, and oval veined Leaves.
8. APOCYNUM caule volubili foliis ovatis rigidis obliquis cymis lateralibus tubo floris longissimo. Dogbane with oval stiff Leaves which are oblique, a twining Stalk, and Flowers growing from the Side of the Branches which have a very long Tube. Greater climbing Dogbane with roundish Leaves.
9. APOCYNUM caule fruticoso scandente foliis ovatis nervosis cymis lateralibus flore luteo magno tubo longissimo. Dogbane with a climbing shrubby Stalk, oval veined Leaves: the Flowers growing in Bunches from the Sides of the Stalks, and a large yellow Flower with a very long Tube.
10. APOCYNUM foliis oblongo-cordatis, mucronatis sessilibus

filibus floribus lateralibus, caule scandente. Dogbane with oblong Heart-shaped Leaves, which end in a Point, Flowers growing at the Wings of the Leaves, and a climbing Stalk. Climbing Dogbane with oblong pointed Leaves, and large yellow open Flowers.

11. *APOCYNUM foliis cordatis glabris floribus villosis lateralibus petiolis longioribus caule scandente.* Dogbane with smooth Heart-shaped Leaves, hairy Flowers growing from the Side of the Branches, with longer Foot Stalks, and a climbing Stalk. Climbing Dogbane with large yellow hairy Flowers, and swelling angular Pods, which are smooth.

The 1st Sort grows naturally in *North America*. This hath an annual Stalk, and a perennial Root; the Stalks rise about three Feet, grow upright, and are garnished with smooth oval Leaves, growing opposite. These, as also the Stalks, abound with a milky Juice, which flows out when they are broken, the Flowers are collected in a kind of Umbel, growing at the Top of the Stalks. These are white, and the Nectariums in the Bottom, have a purplish Cast; the Flowers are of one Leaf, divided into five Parts at the Top. These are seldom succeeded by Pods in *England*, but the Plant is propagated by parting of the Roots. It is hardy, so will thrive in full Ground, but the Soil should be light or dry, otherwise the Roots are apt to rot in Winter. The best Time to part the Roots is in *March*, before they begin to put out new Stalks.

The 2d Sort is a Native of the same Country, the Roots of this Sort creep far in the Ground, so that when planted in a Garden, it is apt to spread so much, as to be troublesome. The Stalks of this Sort grow about two Feet high, and are red; these are garnished with oblong smooth Leaves, set on by Pairs opposite, and abound with a milky Juice as the former. Towards the upper Part of the Stalk, the Flowers come out from the Wings of the Leaves collected in small Bunches, which are of an herbaceous white Colour, and very small, so make no great Appearance, therefore are seldom admitted into Gardens, except for Variety. This is very hardy, and propagates fast by its creeping Roots. Both these Sorts flower in *July*, and in Autumn their Stalks decay.

The 3d Sort grows upon a small Island in the Sea, near *Venice*, but is supposed to have been originally brought from some other Country. There are two Varieties of this, one with a purple, and the other with a white Flower. The Roots of this creep pretty much, by which it is propagated, for it never produces any Seeds either in the Gardens where it is cultivated, or at *Venice* where it grows without Care, as I have been informed by a very curious Botanist, who resided there many Years, and constantly went to the Spot several Times in the Season to procure the Seeds, but he assured me he never could find any Pods formed on the Plants. The Stalks of this Sort decay in Autumn, and new ones are sent out from the Roots in the Spring. These rise about two Feet high, and are garnished with oval Leaves placed opposite, which are smooth; the Flowers grow at the Top of the Stalks in small Umbels, which are shaped like those of the former Sorts, but are much larger, so that the Sort with purple Flowers makes a pretty Appearance in *July* and *August*. This Sort will live in the open Air, provided it is planted in a warm Situation, and

a dry Soil; for although the Soil in which it grows wild, near *Venice*, is moist; yet in this Country the Roots will rot in Winter in wet Ground. The best Time to remove and part the Roots is in Spring, just before they begin to push out new Stalks.

The 4th Sort grows naturally in *Jamaica*, in the *Savannas*, from whence it had the Title of *Savanna Flower*, by which it is chiefly known in that Island. This Sort rises three or four Feet high, having woody Stalks, which send out a few lateral Branches; these are garnished with oval Leaves, placed by Pairs opposite, which are smooth, and of a shining green Colour on their upper Sides, but are pale, and veined underneath; the Flowers are produced from the Side of the Branches, upon long Foot Stalks; there are commonly four or five Buds at the End of each, but there is seldom more than one of them which comes to Flower, the others withering soon. The Flowers are very large, having a long Tube, which spreads open very wide at the Top, they are of a bright Yellow, so make a fine Appearance in the Places where the Plants grow naturally, being most Part of the Year in Flower. This Plant is too tender to thrive in *England* without the Assistance of a Stove: It is propagated by Seeds, which must be procured from *Jamaica*, for the Plants do not perfect them in *England*; nor are many of the Seeds which are brought from thence good, being either unskilfully gathered before they were ripe, or being put up moist, for few of them have succeeded. The Seeds should be sown in Pots filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark; if they are good, the Plants will appear in a Month or five Weeks after, when they should be treated in the same Manner as other tender Plants from the same Country, with this Difference only, to be sparing in Watering them; for these Plants which abound with a milky Juice, require very little Wet, being soon destroyed by Moisture. These Plants must be constantly kept in the Tan Bed in the Stove; and as they advance in Height, will require larger Pots, but there must be great Care not to over pot them, for unless their Roots are confined, the Plants will not thrive. The second Year the Plants will Flower, if they have been skilfully managed, when they will make a fine Appearance in the Stove, the usual Time of their flowering, in *England*, is in *July* and *August*, but they retain their Leaves through the Year, which being of a beautiful Green, look very well at all Seasons.

The 5th Sort was discovered by Father Plumier, in some of the *French Islands* in *America*, who made a Drawing of the Plant. It was afterwards found by the late Mr. Robert Millar, Surgeon, growing plentifully near *Carthage*, in *New Spain*, from whence he sent the Seeds, which succeeded in several Gardens in *England*. This Plant hath twining Stalks, by which it mounts to the Tops of very tall Trees. These are garnished with stiff, oblong, Heart-shaped Leaves, which are smooth, and of a shining green Colour, being of the same Thickness with those of the Citron Tree. The Flowers are produced in small Clusters, from the Side of the Branches, and are of an herbaceous Colour, so do not make any great Appearance. These appear in *August* and *September*, but are not succeeded by Pods in this Country.

The 6th Sort grows naturally in *India*, *Zeylon*, and upon the Coast of *Guinea*, from whence I have received

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the Seeds. This Plant rises with a woody Stem to the Height of five or six Feet, dividing into several Branches, which are garnished with oblong pointed Leaves, very smooth, and of a shining Green above, but pale underneath; these are ranged by Pairs opposite. From the Wings of the Leaves the Flowers are produced in loose Bunches. These are small, tubulous, and of a purple Colour, but are never succeeded by Pods in this Country. It is a very tender Plant, so must be constantly kept in a hot House, and plunged in the Tan Bed, otherwise it will not thrive in *England*; it may be propagated by Cuttings during the Summer Months, but the Cuttings should be laid to dry in the Stove, three or four Days before they are planted, for as the Plants abound with a milky Juice, so unless the Ends of the Cuttings, where the Wounds are made, are well dried and healed over before they are put into the Ground, they are very subject to rot. This Plant must be sparingly watered, especially in Winter, and should be planted in light sandy Earth.

The 7th Sort grows naturally in *India*. I received Seeds of this from Dr. *Van Royen*, Professor of Botany at *Leyden*, which succeeded in the *Chelsea* Garden. This Plant hath a twining Stalk, by which it rises to a considerable Height, and is garnished with oblong Leaves, which are much veined. These abound with a milky Juice, which flows out whenever they are broken. This Plant has not yet produced Flowers in *England*. It is tender, so requires to be constantly preserved in the Stove, otherwise it will not thrive in this Country.

The 8th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me by the late Dr. *William Houston*. This hath a climbing Stalk, by which it fastens to the neighbouring Trees, and rises ten or twelve Feet high.

The Leaves are oval, stiff, and oblique to the Foot Stalk; the Flowers are produced from the Wings of the Leaves. These are of a purplish Colour, and have very long Tubes, but spread open wide at the Top. This doth not produce Seeds in *England*, nor have I been able to propagate it, either by Layers or Cuttings. It is tender, so must constantly remain in the Stove, and should have little Water.

The 9th Sort hath a climbing woody Stalk, and rises to a considerable Height, by the Support of neighbouring Trees. The Leaves grow by Pairs opposite; these are oval, ending in a sharp Point, and have many transverse Nerves from the Midrib. The Flowers come out from the Wings of the Leaves, each standing upon a separate long Foot Stalk, they are large and of a bright yellow Colour, with very long Tubes, and spread open wide at the Top; these are succeeded by long compressed Pods, which have Borders on one Side, and are filled with long channeled Seeds, which are crowned with long Plumes of soft Down. This Sort grows naturally at *Carthage* in *New Spain*, from whence I received the Seeds which succeeded in the *Chelsea* Garden; it is tender, so will not thrive in *England*, unless constantly preserved in the Stove. This is propagated by Seeds, which must be procured from the Country where it grows naturally, for the Seeds do not ripen in this Country. The Seeds must be sown in Pots, and plunged into a hot Bed, and when the Plants come up, they should be treated in the same Manner as directed for the 4th Sort. It flowers in *August* and *September*, in *England*.

The 10th and 11th Sorts were discovered at *La Vera Cruz*, in *New Spain*, by the late Dr. *William Houston*, who sent their Seeds to *England*, which succeeded in several Gardens. These Plants have both climbing Stalks, by which they mount to the Tops of the tallest Trees, where they grow naturally; and in *England* they have ramped over the Plants in the Stoves, and risen to upward of twenty Feet high. The 10th Sort has produced Flowers in *England* several Times; but the 11th, which grows more luxuriantly than the other, never had any Appearance of Flowers. These are both propagated by Seeds, which should be sown as the 4th Sort, and the Plants must be treated in the same Manner afterward. All these Species of Dogbane abound with a milky Juice, which flows out from any Part of their Stalks or Leaves when they are broken; and this is generally supposed to be hurtful, if taken inwardly, for it doth not raise Blisters on the Skin, as the Juice of Spurge, and other acrid Plants. The Pods of all the Sorts are filled with Seeds, which are, for the most Part compressed, and lie over each other (*imbricatim*) like Tiles on a House: These have each a long Plume, of a cottony Down fastened to their Crowns, by which, when the Pods are ripe and open, the Seeds are wafted by the Wind to a considerable Distance; so that in the Countries where these Plants naturally grow, they are some of the most troublesome Weeds.

The Down of these Plants is in great Esteem in *France*, for stuffing easy Chairs, and making Quilts, which are warm and extremely light, so are very proper Covering for Persons afflicted with the Gout, for the Down is so extreme light and elastic that it occasions no Weight. This the *French* call *Delawad*, and in the Southern Parts of *France*, where some of the Sorts will thrive in the open Air, and perfect their Seeds, there are many Plantations made of these Plants for the sake of the Down.

As many of these Sorts grow plentifully in the uncultivated Lands in *Jamaica*, so this cottony Down might be easily procured from thence in Plenty, and might probably become a vendible Commodity in *England*, which may turn to Advantage, if once it becomes a fashionable Sort of Furniture, especially as the Plants require no Cultivation, the only Trouble being to collect the Down, which, in some of the Sorts, which have large Pods, is produced in great Quantity, so may be collected with little Trouble.

The other Sorts which have been ranged under this Genus, are now referred to the following Genera, to which the Reader is desired to turn, for such of them as are not here enumerated, viz. *Aselepias*, *Cynanchum*, and *Periploca*.

APPLE TREE. See *Malus*.

APPLES of Love. See *Lycopersicon* & *Solanum*.

MAD APPLES. See *Melongena*.

APRICOT, or Abricot. See *Armeniaca*.

AQUIFOLIUM. See *Ilex*.

AQUILEGIA. *Columbine*.

The Characters are,

The Flower hath no Empalement, but is composed of five equal oval Petals, which are plain, and spread open, within which are five equal Nectariums, ranged alternately with the Petals, each of the Horns widening upward, the Opening being oblique to the Side as it ascends, and is fastened

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fastened to the Receptacle within, the lower Part lengthening gradually into a long Tube, banging by a blunt incurved Apex. The Flower hath many Awl-shaped Stamina which are crowned by oblong upright Summits. It hath five oval Germen, supporting Awl-shaped Styles, which are longer than the Stamina, and are crowned by erect Stigma, the Germen afterwards become five cylindrical Vessels, which stand upright, are parallel, pointed, and open in one Cell, which are filled with oval shining Seeds.

The Species are,

1. *AQUILEGIA nectariis rectis petalo lanceolato brevioribus.* Lin. Sp. Plant. 533. Columbine with upright Nectariums shorter than its Petal, which is Spear-shaped. Wild Columbine.

2. *AQUILEGIA nectariis rectis, petalis ovatis longioribus.* Columbine with erect Nectariums, and longer oval Flower Leaves. Mountain Columbine with a large Flower.

3. *AQUILEGIA nectariis incurvis.* Hort. Upsal. Columbine with Nectariums turned inward. Columbine with a double inverted Flower.

4. *AQUILEGIA nectariis rectis flaminibus corollâ longioribus.* Hort. Upsal, 153. Columbine with strait Nectariums, and Stamina longer than the Petals. This is the Early dwarf Canada Columbine.

The 1st Sort is found wild in the Woods in some Parts of England, I have gathered it in the Woods near Bexley, in Kent, and between Maidstone, and Rochester. The Flowers are blue, the Petals short, and the Nectariums very prominent, in which it differs from the 2d, whose Petals are longer, and the Nectariums do not rise so high. This I found growing naturally near Ingleborough Hill, in Yorkshires. The Flowers are much larger than those of the Garden Columbine, and the Seeds which I sowed of this in the Garden at Chelsea, produced the same Species without the least Variation.

The 3d is the Garden Columbine, of which there are great Varieties, not only in the Colour and Fulness of their Flowers, but also in their Form. In some there are no visible Nectariums, but in place of them a Multiplicity of Petals, so that the Flowers are as double as those of the Larkspur. These are commonly called Rose Columbines; the Colours of these are Chestnut, Blue, Red, and White, and some are finely variegated with two Colours.

There are others with sharp pointed Petals, which expand in Form of a Star; of these there are single and double Flowers, of the several Colours as the former. From the different Shape of these Flowers, any Person not well skilled in the Culture of Plants, would suppose they were distinct from the others; but having several Years sown their Seeds, which were collected with great Care, I have found them always varying from one to the other: Therefore I have not enumerated their Varieties here, knowing they can never be preserved the same from Seeds, however carefully they are saved: But as the Sorts with variegated Flowers, are the greatest Beauties, so those Persons, who are desirous to have them in Perfection, should root out all those Plants whose Flowers are not well marked, or cut off their Stems so soon as their Flowers appear, leaving only the most beautiful to seed.

They are all raised by sowing the Seeds, or parting the

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old Roots, but the former Method is chiefly practised; for the old Roots are very apt to degenerate after they have blown two or three Years, and become quite plain.

The Seeds should be sown in a Nursery Bed in September, for the Seeds which are kept till Spring seldom grow well, or at least remain in the Ground a whole Year. In the Spring following your young Plants will appear above Ground, you must therefore clear them from Weeds, and if the Season should be dry, refresh them with Water, that they may gather Strength.

In the Middle or latter End of May, these Plants will be strong enough to transplant; you must therefore prepare some Beds of good fresh undunged Earth, planting them therein at eight or nine Inches Distance every Way, keeping them clear from Weeds, and refreshing them with a little Water, as they may require it.

At Michaelmas you may remove them into the Borders of your Flower Garden, and the May following they will produce Flowers; but if you intend to maintain their Roots, you should not suffer them to seed, but crop off all their Flower Stems as soon as the Flowers are past.

In order to be sure of having no single or bad Flowers in your Borders, you may suffer them to remain in the Nursery Beds until they have blown; at which Time you may put a Stick by each Root you fancy to preserve, or pull out all the single or bad coloured ones, cutting off all the Flowers from your best Roots as soon as they have shewn themselves, which will greatly add to the preserving them fair in their Colours; these Roots will be strong enough to divide at Michaelmas, when you may transplant them into your Borders; do not divide them too small, which will weaken their Bloom the succeeding Year.

In order to keep up a Succession of good Flowers, you should sow fresh Seeds every Year; and if you can meet with a Friend, at some Distance, who is furnished with good Flowers of this Kind, it will be very advantageous to both Parties, to exchange Seeds once in two Years, by which Means they will not be so apt to degenerate into plain Colours.

In saving the Seeds of the variegated Columbines, great Care should be taken not to suffer any plain Flowers to remain for Seed, there being generally some plain Flowers intermixed with the striped ones on the same Plant, and often in the same Branches: These should be cut off, for if they are permitted to seed, they will degenerate into plain Colours; so that there cannot be too much Care taken in saving the Seeds, where the Beauty of their Flowers are regarded.

The Canada Columbine flowers almost a Month before the other Sorts; for which Reason it is preserved in the Gardens of the Curious, though there is no very great Beauty in the Flowers. There is another Variety of this Sort, with taller Flower Stems, which flowers a little after the other, but doth not differ, either in the Shape of its Flowers or Leaves from this, so I conclude that they are but one distinct Species. The Canada Columbines flower in April, and their Seeds ripen the Beginning of August. The other Sorts flower toward the End of May, and in cool Seasons will continue to produce Flowers till the Middle of July, and their Seeds ripen toward the Middle or End of September, according as the Season proves more or less favourable.

The first Sort is that which is directed for medicinal Use

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Use in the Dispensatories, but at present is very rarely ordered.

ARABIS. Lin. G. P. 732. Bastard Tower Mustard.

The Characters are,

The Flower hath a four leaved Empalement, two of the opposite Leaves being large, and the other two narrow, these fall off. The Flower hath four Petals in Form of a Cross, which spread open; at the Bottom of each is situated a reflexed Nectarium fixed to the Empalement, and between these arise six upright Stamina, two of which are no longer than the Flower Cup, the other four are much longer: These are crowned with Heart-shaped Summits. In the Center is situated a taper Germen, which is as long as the Stamina, having no Style, but the obtuse Stigma rests upon it. This afterward becomes a narrow long compressed Pod opening Lengthways, having two Valves and a thin Partition, between which is lodged a Row of flat Seeds.

The Species are,

1. ARABIS foliis petiolatis lanceolatis integerrimis. Vir. Cliff. 64. Bastard Tower Mustard, with whole Spear-shaped Leaves having Foot Stalks.

2. ARABIS foliis amplexicaulibus dentatis. H. C. Bastard Tower Mustard, with indented Leaves embracing the Stalks. Perennial white Gilliflower of the Spring.

3. ARABIS foliis amplexicaulibus siliquis ancipitibus linearibus calycibus subpilosis. Hort. Up. 191. Bastard Tower Mustard with Leaves embracing the Stalks, narrow Pods hanging two Ways, and hairy Flower Cups. Broad leaved hairy Tower Mustard, with hanging Pods.

4. ARABIS foliis amplexicaulibus siliquis decurvis planis linearibus, calycibus subrugosis. H. U. Bastard Tower Mustard, with narrow plain hanging Pods and rough Flower Cups. Stock Gilliflower with a Leaf of Dame's Violet.

The first Sort is a low Plant, which seldom rises more than four or five Inches high, sending out many short Branches on every Side; these have small white Flowers growing alternately the most Part of their Length, which have each four Petals in Form of a Cross, and are succeeded by long slender Pods filled with small round Seeds. It grows naturally on sandy dry Ground, in many Parts of England. In English it is titled Coddled Mouse-ear.

The second Sort grows naturally in *Stria*, from whence I received the Seeds; it also is a Native of the *Alps*, and other mountainous Countries. This is a perennial Plant, which increases very fast by its creeping Roots, which run obliquely near the Surface of the Ground, and send down Roots at every Joint. The Leaves are collected into Heads, spreading circularly like those of the *London Pride*. These are oblong, whitish, and indented on their Edges; out of these Heads arise the Flower Stalks, which grow near a Foot high, and are garnished with Leaves placed alternately, which are broader at their Base than those which grow below, and closely embrace the Stalks: The Flowers grow in loose Bunches on the Top; these are white, and have Leaves in Form of a Cross, which are succeeded by long flat Pods, opening lengthways, having two Cells, which are separated by an intermediate Partition, each having one Row of flat reddish Seeds.

This is a very hardy Plant, so will thrive in any Situation. It produces Seeds in Plenty, but as it multiplies so fast by its creeping Roots, so few Persons are at the Trouble to sow the Seeds. It flowers early in the Spring, and having many Stalks rising from one Root, they

make a pretty Variety in cold Situations, where many finer Plants will not thrive, so may have Place in rural Plantations among Shrubs, where they will thrive with very little Care.

The third Sort grows naturally in *Siberia*, from whence the Seeds were brought to *Petersburgh*, and sown in the Imperial Garden. This is a perennial Plant, which grows near a Foot high; the Leaves are broad, hairy, and indented on their Edges; these closely embrace the Stalks. The Flowers grow alternately in loose Spikes, and are of a dirty white Colour. These are succeeded by long narrow Pods, which are filled with flat brown Seeds like the former, but the Pods of this hang downwards two Ways. This is a biennial Plant, which is very hardy, so will thrive in any Situation. It flowers early in Spring, and perfects Seeds very well, by which it may be propagated in Plenty.

The fourth Sort grows naturally in *Hungary*, *Sicily*, and *France*. I have also found it growing wild upon some old Walls at *Cambridge* and *Ely*, but the Seeds might probably come out of the Gardens where they were first planted. The Plants of this Kind, which grow on Walls or Ruins, continue much longer than those which are sown in Gardens, where they seldom live above two Years. The Leaves of this Sort are long, broad, hairy, and a little waved on their Edges; they are of a pale Colour, and spread near the Ground: From the Center of these comes out the Stalks, which rise about a Foot and a Half high, having several Leaves growing alternately, which closely embrace them. Toward the Top of the Stalks, they divide into several small Branches, which are terminated by long loose Spikes of Flowers of a dirty white Colour, each having four Petals placed in Form of a Cross. After the Flowers are past, the Germen becomes long flat Pods, which turn backward at their Extremity and open lengthways, having two Rows of flat bordered Seeds of a dark brown Colour, and separated by a thin Partition.

This Sort is easily propagated by Seed, which should be sown in Autumn; for those which are sown in Spring frequently miscarry, or lie in the Ground a whole Year before they grow. When the Plants are strong enough to remove, they may be transplanted into a shady Border, or in rural Plantations, where no other Care will be necessary, but to prevent their being overgrown by Weeds. It flowers in May, and the Seeds ripen in July. There is little Beauty in this Plant, yet many Persons preserve it in their Gardens to make a Variety.

ARACHIS, Earth, or Ground Nut.

The Characters are,

The Empalement of the Flower opens in two Parts, the upper being cut into three at the Extremity, the under one is hollow ending in a Point, and longer than the other. The Flower is of the Butterfly Kind, having four Petals; the Standard is large, roundish, and plain; the Wings are open and shorter than the Standard, the Keel is little longer than the Empalement; and turns back. The Flower hath ten Stamina, nine of which coalesce, and the upper one stands off; these are no longer than the Keel, and are crowned by round Summits. In the Center is situated an oblong Germen, supporting an Awl-shaped Style, crowned by a single Stigma. The Germen afterward turns to an oblong Pod, containing two or three oblong blunt Seeds.

We have but one Species of this Plant, viz.

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ARACHIS. Lin. Hort. Cliff. Earth or Ground Nut.
The native Country of this Plant I believe is *Africa*, though at present, all the Settlements in *America* abound with it; but many Persons who have resided in that Country affirm, they were originally brought by the Slaves from *Africa* there, where they have been spread all over the Settlements.

It multiplies very fast in a warm Country, but being impatient of Cold, it cannot be propagated in the open Air in *England*; therefore whoever has an Inclination to cultivate this Plant, must sow the Seeds in a hot Bed in the Spring of the Year, keeping it covered with Glasses till the Middle or End of *June*; after which, if the Weather proves warm, they may be exposed to the open Air by Degrees. The Branches trail upon the Ground, and the Flowers (which are yellow) are produced single upon long Foot Stalks; as soon as the Flower begins to decay, the Germen is thrust under Ground, where the Pod is formed and ripened; so that unless the Ground is opened, they never appear: The Negroes kept this a Secret among themselves, therefore could supply themselves with these Nuts unknown to their Masters. The Roots of these Plants are annual, but the Nuts or Seeds sufficiently stock the Ground in a warm Country, where they are not very carefully taken up. In *South Carolina* there is great Plenty of them, which the Inhabitants roast, and use as Chocolate.

ARALIA, Berry-bearing Angelica.

The Characters are,

It is an umbelliferous Plant with a globular Umbel, having a small involucre; the Empalement of the Flower is small, indented in five Parts, and rests upon the Germen. The Flower hath five oval Petals, which are reflexed; it hath five Awl-shaped Stamina crowned by roundish Summits; the round Germen below the Empalement supports five short Styles, each of which is crowned by a single Stigma. The Germen afterward turns to a roundish channeled Berry, having five Cells, each containing one oblong hard Seed.

The Species are,

1. **ARALIA caule folioso herbaceo** *Levi. Hort. Upsal.*
70. Berry-bearing Angelica, with an herbaceous leafy Stalk which is smooth. *Canada* Berry-bearing Angelica.

2. **ARALIA caule nudo** *Hort. Cliff.* 113. Berry-bearing Angelica, with a naked Stalk and creeping Root.

3. **ARALIA arborefcens caule foliolisque aculeata** *Vir. Cliff.* 26. Tree Berry-bearing woody Angelica, whose Stalk and Leaves are prickly: Angelica Tree, *vulgo*.

The first Sort is pretty common in many Gardens near *London*, but the second is more rare. Both these Plants grow naturally in *North America*, from whence their Seeds were brought to *Europe*. They are perennial Plants, whose Stalks decay in Autumn, and new ones arise from their Roots in the Spring. The first grows about three Feet high, and divides into many irregular Branches, which are garnished with ramose Leaves, placed alternately; at the Wings of these the Flower Stalks are produced, which are terminated by round Umbels of small four leaved Flowers, of a whitish Colour; these are succeeded by round channeled Berries, which when ripe, are black. This Plant flowers in *June*, and the Seeds ripen in *October*.

The second Sort rises to near the same Height as the former; the Leaves of this divide into two or three Parts,

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each ending with three or five large Lobes, which are sawed on their Edges. The Flower Stalks arise between these immediately from the Root, being naked, and are terminated by round Umbels of Flowers, in Shape and Colour like the first; these are succeeded by Berries, which are smaller than those of the other. This flowers toward the End of *June*, and the Seeds ripen late in the Autumn. The Roots were formerly brought over and sold for Sarsaparilla, and at this Time several of the Inhabitants of *Canada* make Use of it as such, but it is very different from the true Sort.

Both these Sorts are easily propagated by Seeds, which are generally produced in Plenty. These should be sown in Autumn soon after they are ripe, for those sown in Spring, never grow the same Year, so that a whole Season is gained by sowing in Autumn. When the Plants appear, they must be kept clean from Weeds during the Summer; and in the Autumn following, when their Leaves decay, the Roots may be taken up, and transplanted where they are to remain. They are very hardy, so may be planted in any Situation; and as they grow naturally in Woods, so they may be planted in Wilderness Quarters, under Trees, where, although they have no great Beauty, yet they will add to the Variety.

They may also be propagated by parting their Roots; the best Time for doing this is in Autumn, soon after their Leaves decay. These should be planted pretty far asunder, for their Roots spread to a considerable Distance, where left undisturbed for some Years.

The third Sort rises with a woody Stem to the Height of eight or ten Feet, dividing into several Branches; these are garnished with branching Leaves, which are compounded of many divaricated Wings, the Lobes of which are oblong, and the Ribs of the Leaves, as also the Branches and Stems of the Plants, are armed with strong crooked Spines, which renders the Places very difficult to pass through where they grow in Plenty. The Flowers are produced in large loose Umbels, at the Extremity of the Branches, and are of an herbaceous Colour, so make no great Figure; but the Plants are preserved in most of the curious Gardens in *England*. It flowers in *August*, but the Seeds do not ripen in this Country.

This is propagated by Seeds, which are easily procured from *North America*; but as they seldom arrive here till toward the Spring, so the Plants never come up the first Year: Therefore when the Seeds arrive, they should be sown in Pots, filled with light Earth, and placed in a shady Situation, where they may remain until the next Autumn, being careful to weed the Pots constantly; otherwise if Weeds are permitted to grow till they are large, they cannot be taken out, without drawing up the Seeds with their Roots. In Autumn, the Pots should be plunged into an old Bed of Tan, or in a warm Border under the Shelter of a Hedge or Wall; and if the Winter proves severe, it will be proper to cover the Pots with Straw or Peasehaulm, to prevent the Frost from penetrating deep into the Ground. In *March* the Pots should be plunged into a moderate hot Bed, which will bring up the Plants early, so that they will have more Time to get Strength before the following Winter. When the Plants come up, they should be frequently refreshed with Water, and constantly kept clean from Weeds: In *May* they should be inured to the open Air, and when they are removed

removed out of the Bed, should have a shady Situation. These Plants should not be disturbed the first Season, but as they are often injured by Frost when young, so in October the Pots should be placed under a Frame, where they may be screened from hard Frosts, but in mild Weather should be constantly opened to enjoy the free Air. The Leaves of these Plants fall away in the Autumn, so that some Persons have supposed them dead, and have thrown them out of the Pots, which every one should be cautioned against. In the Spring, before the Plants begin to push, they should be carefully shaken out of the Pots, and separated; Part of them should be planted singly into small Pots, and the others may be planted in a Bed of light Earth in a warm Situation. If those which are planted in the small Pots are plunged in a moderate hot Bed, it will greatly forward their Growth; but they must be early inured to bear the open Air, otherwise they will draw up weak. The following Summer they must have a shady Situation, and the next Winter should be sheltered again; the Spring following they may be shaken out of the Pots, and planted where they are designed to remain. Those Plants which were planted in the Bed, will require Protection from the Frost the first Winter; therefore if the Surface of the Ground is covered with old Tanners Bark, it will prevent the Frost from penetrating to their Roots; and if in hard Frosts, some Straw, Pease-haulm, or any light Covering is laid over the Bed, it will secure their Stems from being injured. The Plants in the Bed may remain there two Years, by which Time they will be strong enough to transplant to the Places where they are designed to grow. As these Plants do not come out very early in the Spring, so they often continue growing late in the Autumn, which causes the extreme Parts of their Shoots to be very tender, whereby they often suffer from the early Frosts in Autumn, which kill the upper Parts of the Shoots; but as their woody Stems are seldom injured, so they put out new Branches below: And if in very severe Winters the Stems are destroyed, yet the Roots will remain, and put out new ones the following Summer, therefore they should not be destroyed.

This Plant may also be propagated by its Roots, for as they spread far in the Ground, so if they are laid open, and some of the strongest are separated from the Plant and left in the Ground, they will put out Stems and make new Plants. Or if Part of the Roots are taken off and planted on a moderate hot Bed, they will push out Stems in Plenty, so may be increased with Ease.

ARBOR CAMPHORIFERA. See Laurus.

ARBOR CORAL. See Erythrina.

ARBOR JUDÆ. See Cercis.

ARBUTUS, the Strawberry Tree.

The Characters are,

The Flower hath a small obtuse permanent Empalement, which is cut into five Parts, upon which the Germen sits. The Flower is of one Leaf, shaped like a Pitcher, and divided into five Parts at the Brim, which turn backward. It hath ten short Stamina, which are joined at the Bottom to the Flower Leaf; these are crowned with bifid Summits. At the Bottom of the Flower is situated the globular Germen, supporting a cylindrical Style, crowned by a thick blunt Stigma. After the Flower is past, the Germen becomes an oval or round Berry, having five Cells, which are filled with hard Seeds.

The Species are,

1. ARBUTUS foliis glabris serratis, baccis polyspermis, caule erecto arboreo. Strawberry Tree with smooth sawed Leaves, Berries having many Seeds, and an upright Trunk. The Common Strawberry Tree.

2. ARBUTUS foliis glabris integerrimis, baccis polyspermis caule erecto arboreo. Strawberry Tree with smooth entire Leaves, Berries full of Seeds, and an erect woody Stem. Oriental Strawberry Tree, called *Adracina*.

3. ARBUTUS caulibus procumbentibus foliis ovatis subserratis floribus sparsis baccis polyspermis. Lin. Sp. Plant. 395. *Arbutus* with trailing Stalks, oval Leaves, somewhat indented, Flowers growing loosely, and many Seeds. Bilberry of *Acadia*, with the *Alaternus* Leaf.

4. ARBUTUS caulibus procumbentibus foliis rugosis serratis. Flor. Lap. 161. *Arbutus* with trailing Stalks and rough sawed Leaves. Bilberry with oblong whitish Leaves.

5. ARBUTUS caulibus procumbentibus foliis integerrimis. Flor. Lap. 162. *Arbutus* with trailing Stalks and entire Leaves. This is the *Uva ursi*. Clus. Bearberries.

The first Sort grows naturally in Italy, Spain, and Ireland; this is now very common in the English Gardens. Of this Sort there are the following Varieties, viz. one with an oblong Flower and oval Fruit; another with a double Flower, and a third with red Flowers; but these being only seminal Varieties, I have not mentioned them as Species.

The second Sort grows naturally in the East, particularly about *Magnesia*, where it is so plenty, as to be the principal Fuel used by the Inhabitants of the Country. This grows to a middle sized Tree, the Branches are irregular, and are garnished with large oval Leaves, somewhat like those of the Bay Tree, but not quite so long; these are smooth and entire, having no Serratures on their Edges; the Flowers are shaped like those of the common *Arbutus*, but grow thinly on their Branches. The Fruit is oval, and of the same Colour and Consistence with the common Sort, but the Seeds of this are flat, whereas those of the common Sort are pointed and angular.

The common Strawberry Tree is too well known to require any Description here, being at present in most of the English Gardens; it is one of the greatest Ornaments to them in the Months of October, November, and great Part of December; that is the Season when the Trees are in flower, and the Fruit of the former Year is ripe, being a whole Year growing to Perfection; for the Fruit which is produced from the Flowers of one Year, do not ripen till the Blossoms for the succeeding Year are fully blown: When there is Plenty of Fruit and Flowers upon the Trees, they make a fine Appearance, at a Season when most other Trees are past their Beauty.

Those Trees which have large oval Fruit, make the greatest Figure, the Flowers being larger, and oblong. The Sort with double Flowers is a Curiosity, but as the Flowers have only two Orders of Leaves, they make no great Appearance; nor do the Trees produce Fruit in any Plenty, therefore the other is preferable. The Sort with red Flowers makes a pretty Variety, when intermixed with the other; the Outside of them are of a fine red Colour at their first Appearance, and afterward they change to purple before they fall off. The Fruit of this is the same with the common Sort. All these Varieties are preserved, by inarching or grafting them upon the common

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common *Arbutus*, for the Seeds of either do not produce the same Kind; though from the Seeds of the oval Fruit, there is more of the same produced, than from the Seeds of the common Sort.

The best Method to propagate the *Arbutus* is from Seeds. When the Fruit is perfectly ripe, it should be gathered and mixed with dry Sand, to preserve them till the Middle or latter End of *February*, which is a proper Season for sowing some of the Seeds, in order to have strong Plants before Winter; those which are put in at this Time, must be sown in Pots, and should be plunged into a moderate hot Bed, which will greatly forward their Vegetation; for the Plants will appear in *April*, and if properly managed, will grow eight or ten Inches high before Winter. In order to which, they must be frequently refreshed with Water, and kept very clean from Weeds; when the Summer advances, if the Pots are plunged into an old Tan Bed, it will preserve the Earth in the Pots from drying too fast; but this Bed should be made in a Situation, where the Plants will be screened from the Sun in the Heat of the Day, or shaded with Mats during the Heat. The Beginning of *October*, these Plants may be shaken out of the Pots, and their Roots carefully separated, planting them singly in small Pots filled with light Earth; then plunge the Pots into an old Bed of Tanner's Bark, under a common Frame, observing to shade them from the Sun in the Middle of the Day, and give them Water as they may require: In this Bed the Pots should remain during the Winter, observing to expose the Plants to the open Air, at all Times when the Weather is favourable, but in frosty Weather they must be covered, or they will be in Danger if the Season proves severe. The Spring following, the Plants may be removed to a very gentle hot Bed, which will require no other Covering but Mats. This will enable them to make strong Shoots early in the Summer, whereby they will be in a better Condition to bear the Cold of the succeeding Winter: In this Bed the Plants may continue most Part of the Summer, for if the Pots are taken out and set upon the Ground, the Smallness of their Size will occasion the Earth in them to dry so fast, that Watering will scarcely preserve your Trees alive; but if they are kept growing all the Summer, they will be near two Feet high by the next Autumn: It will be advisable to screen them from the Frost during their Continuance in Pots, by plunging them into the Ground in a warm Place, and covering them with Mats in bad Weather.

When your Trees are grown to three or four Feet high, shake them out of the Pots into the open Ground in the Places where they are to remain; this should be done in *April*, that they may take good Root before the Winter, which might damage them if newly planted.

There are some Persons who propagate the *Arbutus* by Cuttings and Layers, but this is a tedious and uncertain Method; for those Branches which take Root, are generally two Years before they can be taken from the Plant; nor do many of them ever put out Roots when they are laid, especially if the Shoots which are laid down are not very young; and few of the Cuttings will take Root, so it is not worth practising, especially as the Plants so propagated never grow tall, but put out lateral Branches near the Ground, whereby they become very bushy, and are more like a Shrub than a Tree: Whereas those which

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are raised from Seeds, may be trained up to have fine Stems, so will make a much better Appearance.

These Trees are tolerably hardy, and are seldom hurt, except in extreme hard Winters, which many Times kill the young and tender Branches, but rarely destroy the Trees; therefore, however dead your Trees may appear after a hard Winter, yet I would advise you to let them remain till the succeeding Summer has sufficiently demonstrated what are living and what are dead; for the Winters *Anno* 1728-9, and 1739-40, gave us great Reason to believe most of the Trees of this Kind were destroyed; and some were so hasty, as to dig up or cut down, many of their Trees; but all those who had Patience to let them remain, found that scarce one in five hundred failed to come out again the next Summer, and made handsome Plants that Season.

This Tree delights in a moist Soil, for when they are planted in dry Ground, they seldom produce much Fruit: The Flowers of this Tree being produced in Autumn, if the Winter proves severe, are generally destroyed, which has occasioned their producing very little Fruit in *England* for several Years: Therefore, in order to obtain Fruit, the Trees should be placed in a warm Situation; and where the Ground is not naturally moist, there should be a good Quantity of Loam and rotten Neat's Dung laid about their Roots; and if the Spring should prove dry, they must be plentifully watered, in order to have Plenty of Fruit.

The very best Season for transplanting the *Arbutus* is in *September*, at which Time the Blossoms are beginning to appear; and at that Season, if it should prove very dry and they are kept moist, they will take Root very soon; at the end of *October*, their Roots should be well covered with Mulch, to keep out the Frost.

The 3d Sort grows naturally in *Acadia*, and other Northern Parts of *America*, upon swampy Land, which is frequently overflowed with Water; this is a low bushy Shrub, with slender trailing Branches, which are garnished with oval Leaves, a little sawed on their Edges; the Flowers come out from the Wings of the Leaves, growing in thin loose Bunches. The Fruit of this Sort is never produced in *England*, and it is with great Difficulty the Plants are kept alive here.

The 4th Sort grows naturally on the *Alps* and the *Helvetian* Mountains, also in *Lapland* and *Siberia*. This never rises high, but sends out from the Roots many slender Branches, which trail upon the Ground; these are garnished with oblong rough Leaves, of a pale green Colour; the Flowers are produced from the Wings of the Leaves, upon long slender Foot Stalks; these are succeeded by Berries about the Size of the common black Cherry, which are first green, afterward red, and when ripe they are black. These are of a pleasant Taste, so are frequently eaten by the Inhabitants of those Countries where they grow naturally: This is also a very difficult Plant to keep alive in Gardens, for it is an Inhabitant of Bogs, growing among Moss where the Ground is never dry.

The 5th Sort grows naturally upon the Mountains in *Spain*, and the Northern Parts of *Europe* and *America*. This rises little more than a Foot high, dividing into many Branches, which are closely garnished with smooth thick Leaves of an oval Form, and placed alternately; the

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the Flowers are produced in small Bunches toward the Extremity of the Branches, which are shaped like those of the common Sort, but smaller; and are succeeded by Berries, of the same Size with those of the former Sort, which are red when ripe.

There are few of these Plants in the English Gardens, for as they are Inhabitants of very cold Countries, covered with Snow all Winter, and growing upon Bogs, among Moss, so when they are brought into a Garden, they seldom continue long, nor do they thrive with the utmost Care; in Places where artificial Bogs have been contrived to receive these Plants, they have been preserved two or three Years, and then have perished; so that unless the Place where they are planted is naturally boggy, there is little Hopes of their succeeding long.

The *Andrachne* is at present very rare in England; this may be propagated the same Way as hath been directed for the common *Arbutus*, but as there are no Plants in this Country which produce Fruit, the Seeds must be procured from the *Levant*, where they may be had in Plenty. As the Leaves of this Tree are larger than those of the common *Arbutus*, the Trees make a finer Appearance, and deserve our Care to cultivate them, especially as the bear the open Air, when the Plants are become woody; for when young, they are impatient of much Frost; therefore they should be preserved in Pots three or four Years, till they have obtained Strength, and may then be planted in a warm Situation and on a dry Soil, for they will not thrive in wet Ground.

ARCTIUM. Lin. Gen. 830. Burdock.

The Characters are,

The Empalement of the Flower is scaly, each ending in a long Thorn which is reflexed at the Point. The Flower is composed of many Florets, which are tubulous and uniform; these are of one Leaf. The Tube is long and slender, and cut into five narrow Segments at the Top: These have five short slender Stamina, which are crowned by cylindrical Summits. The Germen is situated at the Bottom of the Tube, having a hairy Tip, supporting a long slender Style, crowned by a bifid reflexed Stigma; the Germen afterward becomes a single pyramidal angular Seed, crowned with Down.

The Species are,

1. ARCTIUM foliis cordatis inermibus petiolatis capitulis majoribus sparsis. Burdock with Heart-shaped Leaves, without Prickles, having Foot Stalks, and large Heads growing scatteringly.

2. ARCTIUM foliis cordatis inermibus, capitulis minoribus compactis. Burdock with heart-shaped Leaves without Spines, and small Heads close together.

3. ARCTIUM foliis cordatis inermibus, capitulis majoribus tomento-reticulatis. Burdock with Heart-shaped Leaves, without Spines, and larger woolly netted Heads.

The two 1st Sorts are common Weeds, growing on the Sides of Roads and Foot Paths in most Parts of England, so are not admitted into Gardens. The 1st is ordered for medicinal Use by the College of Physicians, therefore I have inserted it here: The 2d is by many supposed to be only a Variety of the 1st, but I have for several Years sown the Seeds of both Sorts in the Chelsea Garden, where they have constantly retained their Difference.

The 3d Sort is not a Native of England, but grows naturally on the Apennine Mountains, The Leaves are

like those of the common Sort, but whiter on their under Side: the Heads are more compact, and the Florets of a bright red Colour; but the greatest Difference is in their Heads, which in this Sort are beautifully netted with a fine Down all over. This is also supposed to be only a Variety of the common Sort, but I have cultivated it above thirty Years, during which Time it has never varied, so that it is certainly a distinct Species.

As these Plants are seldom admitted into Gardens, it is needless to say any Thing of their Culture; but where they are troublesome Weeds, it may not be amiss to mention, that their Roots last but two Years, so they may be destroyed with little Trouble; if they are cut up before they seed, in two or three Years they may be entirely rooted out; for the Plants which come up from Seed, do not flower till the second Year, and when the Seeds are perfected their Roots decay.

ARCOTIS. This hath been usually known under the Title of *Anemonospermus*, from the Resemblance the Seeds of these Plants have to that of the *Anemone*. We have no English Name for this Plant.

The Characters are,

The common Empalement is roundish and scaly, those on the lower Part are loose and silvery, the upper are oval and concave. The Flower is composed of many female Flowers which are ranged round the Border; these have one Side stretched out like a Tongue, which are called the Rays; and have an oval four cornered Germen situated in their Center, which is crowned with Down, supporting a slender Style, crowned by two oval Stigma; the Germen afterward becomes a single roundish Seed, covered with a soft Down. The Middle or Disk of the Flower is composed of hermaphrodite Florets, which are Funnel-shaped, and divided at the Top into five Parts, which are reflexed; these have five Stamina, crowned by short Summits; in the Center is placed a small Germen, supporting a cylindrical Style with a single Stigma. These Flowers are abortive.

The Species are,

1. ARCTOTIS foliis pinnatis, caule herbaceo, petalis radii profundi trifidis. Flor. Leyd. 179. *Arctotis* with an herbaceous Stalk, winged Leaves, and the Rays of the Flowers deeply cut into three Parts. African *Anemonospermus* with hoary Dandelion Leaves.

2. ARCTOTIS foliis lanceolato-linearibus integris denticulatis. Lin. Hort. Cliff. 412. *Arctotis* with narrow Spear-shaped Leaves, which are indented on the Sides. African *Anemonospermus* with a stiff sawed Leaf, and a Flower of a Brimstone Colour within, and purple without.

3. ARCTOTIS foliis pinnato-sinuatis, laciniis oblongis dentatis. Lin. Hort. Cliff. 412. *Arctotis* with sinuated winged Leaves, with long Indentures, and a beautiful Orange-coloured Flower.

4. ARCTOTIS foliis ovatis dentatis, petiolis longissimis, supernè dentatis, caule ramoso. Lin. Hort. Cliff. 412. *Arctotis* with oval indented Leaves, with long Foot Stalks, whose upper Side is indented, and a branching Stalk. African *Anemonospermus* with Sea Rag wort Leaves, and a Sulphur-coloured Flower.

5. ARCTOTIS ramis decumbentibus foliis lineari-lanceolatis rigidis subtus argenteis flore magno aureo pediculo longissimo. Fig. Pl. Tab. 49. *Arctotis* with trailing Branches, narrow, stiff, Spear-shaped Leaves, white on their under Side, a large golden Flower, and a very long Foot Stalk.

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6. *ARCTOTIS foliis pinnato-sinuatis subtus argenteis sessilibus, flore magno aurantio.* *Arctotis* with sinuated winged Leaves, lying close to the Stalk, white on their under Side, and a large Orange-coloured Flower.

7. *ARCTOTIS foliis cordatis nervosis marginibus crenatis petiolis longissimis.* *Arctotis* with nervous Heart-shaped Leaves, whose Edges are indented, and very long Foot Stalks. *African Anemonospermus* with a Plantain Leaf, and a Sulphur-coloured Flower.

8. *ARCTOTIS foliis pinnato-laciniatis crispis caule ramo fruticoso.* *Arctotis* with winged jagged Leaves, which are curled, and a branching Shrubby Stalk. *African Anemonospermus* with Leaves like the Blessed Thistle, and the Inside of the Rays white.

These Plants are Natives of the Country about the Cape of Good Hope, from whence they have been brought to some curious Gardens in Holland; where there are several other Species not yet in the English Gardens.

The 1st Sort is an annual Plant, which should be sown upon a moderate hot Bed, toward the End of March; when the Plants are fit to transplant, they should be each put into a single Pot, and as soon as they are well rooted, they must by Degrees be inured to the open Air, into which they should be placed as soon as the Weather is warm, and will require much Water in dry Weather; for their Roots soon fill the Pots, and strike into the Ground, if they stand long unremoved. This Plant may also be sown upon a warm Border of light Earth in the open Air in the Middle of April, where they are designed to remain; these will flower in August, and if the Season proves favourable, will perfect Seeds very well, and these Plants will grow much stronger than those raised upon the hot Bed; but as in cold Seasons they will fail to perfect their Seeds, it will be a secure Method to raise some upon the hot Bed, which never fails to perfect Seeds, provided they are not treated too tenderly.

The 5th, 6th, and 7th Sorts are low Plants, seldom rising in Stem above four or five Inches, their Leaves spreading near the Surface of the Ground; the Flowers are produced from single Foot Stalks rising from the Center of the Plants; these flower in April or May, and make a fine Appearance; but seldom perfect their Seeds in England; therefore are propagated by Cuttings; but as they are Plants of small Growth, they do not increase very fast here. The best Way to obtain Good Seeds of these Plants is to expose them to the open Air when in Flower; for if they are drawn weak by being kept in the House, they never produce good Seeds.

The 2d, 3d, 4th, and 8th Sorts, grow to the Height of four or five Feet, and the 8th, sometimes to six or seven, sending forth many Branches; therefore will require to be frequently pruned, to keep them in tolerable Order, especially the 8th, which sends forth strong rambling Shoots, when their Roots are not too much confined in the Pots, but more so when they are duly watered: These four Sorts are seldom destitute of Flowers the whole Year, unless the Winter is very severe; this renders them more valuable than those which flower at one Season only, though the flowers of the latter are more beautiful; for all those Plants which flower in the Winter Season, make a fine Variety in the Green-house; and when the Plants are set abroad in Summer, their Flowers being at that Season produced in greater Plenty, they add to the Beauty of a Garden.

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The first Sort, being an annual Plant, doth not flower till July, but there will be a Succession of Flowers upon the Plants till the Frost puts a Stop to them.

The 5th and 6th Sorts flower in May and June, these have very large beautiful Flowers, especially the 5th, whose Bottom is finely chequered with black and white, and the Rays being of a deep Gold Colour, are set off by the other Colours. This Plant is easily propagated by Cuttings; but the 6th Sort never sends out any Branches so it is difficult to propagate in this Country, where it seldom produces Seeds.

The shrubby Sorts are propagated by planting Cuttings in a Bed of light fresh Earth, in any of the Summer Months, observing to shade them from the Heat of the Sun until they have taken Root, as also to refresh them often with Water; in six Weeks or two Months after planting, they will be rooted sufficiently, when you should transplant them into Pots filled with the like fresh Earth, setting the Pots in a shady Place until the Plants are settled in their new Earth, after which you should expose them to the open Air until the latter End of October, or later, according as you find the Weather favourable; you must then remove the Pots into the Green-house, where they should be placed as near the Window as possible, that they may have a good Quantity of free Air at all Times, when the Weather is mild; nor should they be over hung by other Plants, which would occasion them to take a Mouldiness, and rot; you must often refresh them with Water, giving it plentifully in mild Weather, otherwise their Leaves and Branches will hang down and wither; in Summer they can scarce have too much Water given them, if the Pots are not stopped, so that the Water may get through the Holes at the Bottom. They will also require to be shifted into other Pots two or three Times, at least, every Summer, and the Pots should be frequently removed, to prevent the Plants from striking their Roots through the Holes into the Ground, which they are very apt to do, and then they will shoot very vigorously; but when these Roots are torn off, by removing the Pots, the Plants are often killed.

All these Plants should be frequently renewed by Cuttings, because the old Plants are subject to decay in Winter; therefore if young Plants are not annually raised, the Species may soon be lost.

If the Green-house, in which these Plants are placed in Winter, is subject to Damps, it will be very difficult to preserve some of the Sorts, for when the Windows are kept close, the tender Parts of their Shoots are very subject to a Mouldiness, which will soon cause the Plants to decay, if it is not constantly cleaned off, and free Air admitted to dry off the Damps.

ARCUATION; the raising of Trees by Layers.

The first Thing to be done, is, to procure strong Mother Plants, which are usually called Stools. It is no Matter whether the Trees be crooked or deformed; and the larger they are, the better to cut down close to the Ground. They are to be planted in a Border six Feet wide, and in a strait Line six Feet asunder.

The Border must be well trenched, or dug, and cleared from all Roots, Clods, Stones, or other Obstructions. The Trunks, or Stools, being planted in this Trench, will throw out twenty, thirty, forty, or fifty Shoots; which may be laid about the Michaelmas following; at which

which Time, if the Stools have been carefully managed, they will have shot five, six, or more main Branches out of the Root; and on every one of these, as many side, or collateral Branches.

These main Branches must be bent down to the Ground; and some cut them half through, that they may bend the easier.

When the main Branches are thus laid round the Stool, and pegged fast down, then the small ones may be pegged down too, and thus the main Branches, or Shoots, will be covered all over, except the very Top, and all the small and fine Branches must be covered three Inches thick upon the Joints; some Persons give the Branches a Twist, in order to make them take Root the sooner. If they be mulched, or some strawy Dung laid over them, it will be of Use to keep them moist; they ought also to have a large Basin of Earth made round them to hold the Water, in order to water them the ensuing Summer; which they will require sometimes, if the Weather be hot and dry. About the Middle of September following they may be opened and examined, to see if they have taken Root, which is very probable; but if not, they must be let to lie till the next Autumn; when they are to be taken up, and planted in the Nursery.

This may be done to the Dutch, Witch, and English Elm; the Abeal, Lime, Alder, Platanus, and all Sorts of Sallows and Willows, as also many Sorts of ever-green Trees, and flowering Shrubs.

ARGEMONE, prickly Poppy.

The Characters are,

The Flower hath a three leaved Empalement, which falls off; it hath five roundish Petals, which spread open, and are larger than the Empalement, in the Center is situated an oval five cornered Germen, crowned by a large obtuse Stigma, which is permanent, and divided into five Parts. This is attended by a great Number of Stamina, which are crowned by oblong erect Summits; the Germen afterward becomes an oval Seed Vessel, having five Angles, and so many Cells, which are filled with small rough Seeds.

There is but one Species of this Plant known, viz.

ARGEMONE Mexicana. Tourn. The Prickly Poppy.

This is an annual Plant, which is very common in most Parts of the West-Indies; and is, by the Spaniards, called *Fico del Inferno*, or the Devil's Fig; there is no great Beauty or Use of this Plant amongst us, that I know of; but whoever hath a mind to cultivate it, should sow it on a Bed of light Earth, in the Spring, where it is to remain; and if it comes up too thick, the Plants must be thinned out to four Inches Distance; where, when once it has shed its Seed, you will not want Plants for several Years after. I have been informed that Gumbouge is made from the Juice of this Plant, but how true I cannot take upon me to determine.

ARIA THEOPHRASTI. See Cratægus.

ARISARUM. See Arum.

ARISTOLOCHIA. Birthwort.

The Characters are,

The Flower hath no Empalement; it is of one Leaf, which is unequal, the Base is swelling and globular, afterward is extended in a cylindrical Tube, which spreads open at the Brim, where the lower Part is stretched out like a Tongue. It hath no Stamina, but there are six Summits which join the under Part of the Stigma: The oblong angular Germen

sits under the Flower, supporting a concave globular Stigma, divided into six Parts; the Germen afterward turns to a large Seed Vessel, differing in Form, which opens in six Cells, which are filled with Seeds, for the most Part compressed.

The Species are,

1. ARISTOLOCHIA foliis cordatis, subsessilibus obtusis, caule infirmo, floribus solitariis. Lin. Sp. Plant. 962. Birthwort with blunt Heart-shaped Leaves, growing close, a weak Stalk, and Flowers growing singly. Round rooted Birthwort with a black purple Flower.

2. ARISTOLOCHIA foliis cordatis petiolatis integerrimis obtusiusculis, caule infirmo floribus solitariis. Lin. Sp. Plant. 962. Birthwort with intire Heart-shaped blunt Leaves, having Foot Stalks, a weak Stalk, and Flowers growing singly. True long rooted Birthwort.

3. ARISTOLOCHIA foliis cordatis, caule erecto, floribus axillaribus confertis. Hort. Upsal. 279. Birthwort with Heart-shaped Leaves, an upright Stalk, and Flowers growing in Clusters from the Side of the Stalks. Upright or climbing Birthwort.

4. ARISTOLOCHIA foliis cordatis, crenulatis petiolatis, floribus solitariis. Lin. Sp. Pl. Birthwort with Heart-shaped indented Leaves, having Foot Stalks, and Flowers growing singly. Birthwort called Pistolochia.

5. ARISTOLOCHIA foliis cordato-oblongis undatis, caule infirmo, floribus solitariis. L. Sp. P. Birthwort with oblong Heart-shaped waved Leaves, a weak Stalk, and Flowers growing singly. Ever-green Birthwort of Crete.

6. ARISTOLOCHIA foliis cordato-oblongis planis, caulibus infirmis flexuosis, teretibus floribus solitariis. Lin. Sp. Pl. 961. Birthwort with plain oblong Heart-shaped Leaves, flexible weak Stalks, and Flowers growing singly. The Virginia Snakeroot.

7. ARISTOLOCHIA foliis cordato-lanceolatis caule erecto fruticoso. Lin. Sp. Pl. 960. Birthwort with Spear-shaped Leaves, in Form of a Heart, and an upright shrubby Stalk. Virginia Birthwort with eared Leaves.

8. ARISTOLOCHIA foliis cordato-oblongis caule volubili pedunculis multifloris. F. Z. Birthwort with oblong Heart-shaped Leaves, a twining Stalk, and many Flowers upon each Foot Stalk. The Contrayerva of Jamaica.

9. ARISTOLOCHIA birta floribus solitariis pendulis recurvatis sublabiatis. Lin. Sp. Plant. 961. Hairy Birthwort with hanging recurved Flowers, growing singly, and formed like a Lip. Long rooted hairy Birthwort with an oblong Leaf and a large Flower.

10. ARISTOLOCHIA foliis cordatis petiolis longissimis, caule scandente, floribus terminalibus pediculis longissimis. Birthwort with a climbing Stalk, Heart-shaped Leaves, with very long Foot Stalks, and Flowers growing at the End of the Branches upon very long Foot Stalks.

11. ARISTOLOCHIA foliis cordatis petiolatis, caule scandente, floribus axillaribus confertis. Birthwort with Heart-shaped Leaves, a climbing Stalk, and Flowers growing in Clusters from the Wings of the Stalk.

12. ARISTOLOCHIA foliis lanceolatis sessilibus subbirsutis, caule erecto floribus solitariis longissimis. Birthwort with Spear-shaped hairy Leaves, growing close to the Branches, an upright Stalk, and very long Flowers growing singly. Upright Birthwort with a blackish purple Flower, narrow Leaves, and a creeping Root.

13. ARISTOLOCHIA foliis oblongo-ovatis obtusis integerrimis, caule scandente floribus terminalibus, fructibus hexangularibus

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hexangularibus maximis. Birthwort with a climbing Stalk oblong oval entire blunt Leaves, Flowers at the Ends of the Branches, and very large Fruit with six Angles.

The 1st and 2d Sorts grow naturally in the South of France, in Spain, and Italy, from whence their Roots are brought for medicinal Use. The Roots of the 1st Sort are roundish, and grow to the Size of small Turneps; and are in Shape and Colour like the Roots of the common Cyclamen, the Roots of which are frequently sold in the Markets for those of the round Birthwort, which at first may have been occasioned by the supposed Virtues of the Roots of the Cyclamen: Many of the old Writers on Physic having related, that if a pregnant Woman slept over one of these Roots, it occasioned Miscarriage; and that the Roots, properly applied, promoted the Delivery. These send out three or four weak trailing Branches, which lie on the Ground when not supported, and extend to the Length of two Feet; the Leaves are Heart-shaped, and rounded at their Extremity; these are placed alternately on the Stalks; and close to the Foot Stalks of the Leaves, the Flowers come out singly, at every Leaf, toward the upper Part of the Stalk. They are of a purplish black Colour, and shaped like those of the other Sorts, and are frequently succeeded by oval Seed Vessels, having six Cells, full of flat Seeds. The Flowers appear in June and July, and the Seeds ripen in Autumn.

The 2d Sort hath long tap Roots, shaped like Carrots; these send out weak trailing Branches, which extend little more than a Foot; the Leaves are paler, and have longer Foot Stalks than the first; these are placed alternately, and the Flowers come out from the Wing of the Leaves, like the other, which are not so long, and of a pale purple Colour: They are sometimes succeeded by oblong Seed Vessels, having six Cells filled with compressed Seeds. The Stalks of both Sorts decay in the Autumn, and new ones are produced in the Spring.

They are both propagated by Seeds, which should be sown in Autumn, in Pots filled with light Earth, and placed under a Frame, to be screened from the Frost: but the Glasses should be taken off at all Times when the Weather is mild, and only covered in hard Frost, or during too much Wet. If these Pots are put into a gentle hot Bed in March, it will bring up the Plants much sooner. When the Plants appear, they should be shaded from the Sun, in the Heat of the Day; and must be frequently refreshed with Water. As the Season advances the Plants should be inured by Degrees to bear the open Air, for they should not be drawn weak; and when the Pots are taken out of the Bed, they must be placed where they may enjoy the Morning Sun, but screened from it in the Heat of the Day. The Weeds must constantly be taken out of the Pots, and gentle Refreshings of Water given to the Plants in dry Weather during Summer; but in Autumn, when their Stalks begin to decay, they must have little Wet: In Winter the Pots must be sheltered as before; and in March, before the Roots begin to shoot, they should be transplanted into separate small Pots filled with light Earth, and set under the Frame again, where they should remain till the End of April, when they may be removed into the open Air, and treated in the same Manner as in the former Summer, and sheltered also the following Winter. The next Spring they

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may be turned out of the Pots, and planted in a warm Border, where, during the Summer, they will require no other Care but to keep them clean from Weeds, and in the Autumn when their Stalks are decayed, if the Border is covered with old Tanners Bark to keep out the Frost, the Roots will be secured; but where this Care is not taken, the Roots are frequently killed by Frost. With this Management the Roots will thrive much better than those which are kept in Pots, and continue longer; and when three Years old they will flower and produce Plenty of Seeds, whereas those in Pots seldom perfect their Seeds in England.

When the Seeds of these Plants are sown in Spring, the Plants will not appear till the Spring following; so that a whole Season is lost, and many times they fail, therefore it should always be sown in the Autumn.

The 3d Sort grows naturally in France, Spain, Italy, and Hungary, but is preserved in some of the English Gardens being sometimes used in Medicine. This is a great creeper at the Root; and if once it has taken in a Garden, it will be difficult to extirpate again, and will overrun whatever Plants grow near it; therefore it should be planted in some abject Part of the Garden by itself, for it will thrive in almost any Soil or Situation.

The 4th Sort grows wild in Spain, Italy, and the South of France; but in England it is preserved, for Variety, in Botanic Gardens. The Plants must be set in Pots filled with light rich Earth, and sheltered from severe Cold in Winter, or they will be destroyed; but they should have as much free Air as possible in mild Weather. This produces Flowers every Year; but never perfects Seeds here.

The 5th Sort grows naturally in Crete, but has long been an Inhabitant in the English Gardens. The Root of this Sort is perennial, and sends out many trailing Branches, which extend to about one Foot and a Half in Length; these are garnished with oblong Heart-shaped Leaves, which are waved on their Edges, and Evergreen. The Flowers come out singly from the Wings of the Leaves, which are shaped like the others of this Genus, of a dark purple Colour, but never produce Seeds in England, so are propagated by parting of the Roots: This Sort is too tender to thrive in the open Air in Winter, so is preserved in Pots, and placed under a common Frame in Winter, where they should have free Air in mild Weather, but screened from hard Frost; in mild Winters I have had this Plant live abroad in a warm Border, but in hard Winters it will be destroyed; therefore one or two Plants should be sheltered to preserve the Species.

The 6th Sort is the Snakeroot, which is greatly used in Medicine; these Roots are brought over from Virginia and Carolina, where there are two Species of this Plant, but this Sort is the best for Use. There are some of these preserved in the Gardens of those who are curious in collecting rare Plants; but as they are sometimes killed by Frost in Winter, so they are not very common in the English Gardens. This Sort is propagated by Seeds, sown in the Autumn, in small Pots filled with light sandy Earth, and placed under a common Frame in Winter, and afterward treated in the same Manner as directed for the two first Sorts; with which Management they will produce Flowers, and perfect their Seeds every Year.

The 7th Sort grows naturally in North America, and is by

by some called Snakeroot, but is not near so strong as the former; the Branches of this grow erect, and are perennial, whereas those of the other Sort decay to the Root every Winter: This rises about two Feet high; the Branches are not woody, but are strong enough to support themselves; the Leaves are oblong and Heart-shaped; the Flowers come out singly at the Wings of the Leaves. This Sort will live abroad in warm Borders, with a little Protection in hard Frosts. It is propagated by Seeds as the former, and may also be increased by parting of the Roots. It is generally kept in Pots, and sheltered in Winter, but those which are planted in the full Ground will thrive much better, provided they are screened from hard Frosts.

The 8th Sort grows naturally in *Jamaica*, where it is called *Contrayerva*, and the Roots used as such: This hath long trailing Branches, which climb upon the neighbouring Plants, and rise to a considerable Height; the Leaves are placed alternately, and are of the long Heart-shaped Kind; the Flowers are produced in small Clusters, toward the upper Part of the Stalks, which are of a dark purple Colour; the Seed Vessels are oblong and smooth. This Plant is tender, and in Winter should have very little Wet, so must be constantly kept in the Stove, otherwise it will not live in *England*.

The 9th Sort was discovered by Dr. *Tournefort* in the *Levant*. This hath some Resemblance to the second Sort, but the Leaves are not so deeply eared at Bottom, and are hairy; the Flowers of this are also much larger. This may be propagated by Seeds, in the same Manner as hath been directed for the first and second Sorts, and the Plants treated so will thrive very well here.

The 10th Sort sends out climbing Stalks, which support themselves by fastening to the neighbouring Trees, and thereby rise to a very great Height; the Leaves are very broad and Heart-shaped, having several longitudinal Ribs; the Flowers grow in loose Bunches at the Extremity of the Branches, each having a long Foot Stalk: This is tender, so must be kept in a Stove, and treated as other tender exotic Plants. It grows naturally about *Tolu* in *New Spain*, where it was discovered by Mr. *Robert Millar*, who sent the Seeds to *England*.

The 11th Sort was discovered by the same Gentleman at *Campeachy* in *New Spain*: This Sort seldom climbs above three or four Feet high; the Leaves are short and Heart-shaped, in some Measure like those of the first; the Flowers come out in small Clusters from the Wings of the Leaves, and are of a dark purple Colour.

The 12th Sort was discovered at *La Vera Cruz* in *New Spain*, by the late Dr. *Houftoun*, who sent the Seeds to *Europe*: This rises with an upright Stalk, to the Height of three Feet; the Leaves are long, narrow, hairy, and grow close to the Branches, having scarce any Foot Stalk; the Flowers come out singly from the Wings of the Leaves, which are near four Inches long, are of a dark purple Colour, and grow erect; these are succeeded by slender Vessels, about one Inch long, which open into six Cells, filled with flat Heart-shaped Seeds. It requires a warm Stove to preserve it in this Country.

The 13th Sort was discovered by Mr. *Robert Millar*, near *Carthagenia* in *New Spain*; this hath strong climbing Stalks, by which it mounts up to the Top of the tallest Trees; the Leaves are four Inches long, and two broad, of an oval Shape, rounded at their Ends, and are nearly

as thick as those of the common Laurel; the Flowers come out in loose Clusters at the Ends of the Shoots, each standing on a very long Foot Stalk; the Seed Vessels are four Inches long, and as much in Circumference, having six longitudinal Ribs, which make so many Angles, being very prominent; they open into six Cells, which are filled with Heart-shaped Seeds.

All these Sorts, which are Natives of the warm Parts of *America*, are too tender to thrive in the open Air in this Country, and require a Stove to preserve them. They are propagated by Seeds, which must be procured from the Countries where they grow naturally, for they do not produce any here. As the Seeds are a considerable Time in their Passage, so they should be brought over in their Pods; for many of the Sorts have very thin light Seeds, which are soon dried in a hot Country, when they are out of their Covers, which will spoil them for growing. So soon as the Seeds arrive, they should be sown in small Pots filled with light Earth; and if this happens in Autumn, or Winter, the Pots should be plunged into the Tan in the Bark Stove, between some of the Pots with large Plants, which will screen them from the Sun; for as these Plants delight in Shade, so, by thus placing of the Pots, the Earth will not dry very fast, which will be of great Advantage to the Seeds, which should not be too often watered. Here the Pots may remain till *March*, at which Time they should be removed, and plunged into a hot Bed, under Frames, where, if the Seeds are good, the Plants will appear in *May*: But if the Seeds arrive in Spring or Summer, they must be immediately sown in small Pots, and plunged into a moderate hot Bed, observing to shade them constantly in the Heat of the Day; but the Seeds sown at this Season seldom grow the same Year; therefore if the Plants do not appear, the Pots should be plunged in the Tan Bed of the Stove in Autumn, and in the Spring following, treated as before directed, which will bring up the Plants. When these are strong enough to transplant, they should be each put into a small Pot, and plunged into the Tan Bed in the Stove, and treated as other tender Plants from the same Countries.

ARMENIACA, the Apricot.

The Characters are,

The Emplacement of the Flower is of the open Bell-shaped Kind, and is cut into five blunt Segments at the Top; the Flower is composed of five large roundish Petals which spread open, whose Base are inserted in the Emplacement; in the Center is placed a round Germen, supporting a slender Style, crowned by a round Stigma; this is attended by upward of twenty Awl-shaped Stamina, which are crowned by short double Summits. The Germen afterward becomes a roundish pulpy Fruit, having a longitudinal Furrow inclosing a roundish Nut, which is a little compressed on the Sides.

The Varieties are,

1. The Masculine Apricot. 2. The Orange Apricot.
3. The Alger Apricot. 4. The Roman Apricot. 5. The Turkey Apricot. 6. The Breda Apricot. 7. The Brussels Apricot.

The Masculine is the first ripe of all the Apricots; it is a small, roundish Fruit, of a red Colour towards the Sun; as it ripens, the Colour fades to a greenish yellow on the other Side. It is only preserved for being the first ripe, having little Flavour; the Tree is very apt to be covered with Flowers, but as they come out early in the

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Spring, they are frequently destroyed by the Cold, unless the Trees are covered to protect them.

The Orange is the next ripe Apricot; this Fruit is much larger than the former, and as it ripens, changes to a deep yellow Colour. The Flesh is dry and not high flavoured, it is better for Tarts than for the Table.

The *Algier* ripens next; this is of an oval Shape, a little compressed on the Sides; it turns to a pale yellow, or Straw Colour, when ripe; the Flesh is dry, and not high flavoured: This, and what is by some called the common Apricot, are often confounded.

The *Roman* is the next ripe Apricot; this is a larger Fruit than the former, and not compressed so much on the Sides; the Colour is deeper, and the Flesh not so dry.

The *Turkey* Apricot is yet larger than either of the former, and of a globular Figure; the Fruit turns to a deeper Colour than the former; the Flesh is firmer, and of a higher Flavour than either of them.

The *Breda* Apricot (as it is called from its being brought from thence into *England*) was originally brought from *Africa*: This is a large roundish Fruit, changing to a deep yellow when ripe; the Flesh is soft, full of Juice, and of a deep Orange Colour within Side; the Stone is rounder and larger than any of the other Sorts: This is the best Apricot we have, and when ripened on a Standard, is preferable to all other Kinds.

The *Brussels* is the latest ripe of all the Apricots, for when planted against a Wall, it is generally the Beginning of *August* before it is ripe, unless when planted to a full South Aspect; which is what should not be practised, because the Fruit is never well tasted which grows in a warm Exposure. This Fruit is of a middling Size, rather inclining to an oval Figure; red on the Side next the Sun, with many dark Spots, and of a greenish yellow on the other Side; the Flesh is firm, and of a high Flavour; the Fruit often cracks before it is ripe. This is commonly preferred to the former Sort, but when the other is planted as a Standard, the Fruit is fuller of Juice, and of a richer Flavour than this.

Most People train these Trees up to Stems of six or seven Feet high, or bud them upon Stocks of that Height; but this is a Practice I would not recommend, because the higher the Heads of these Trees are, the more they are exposed to the cutting Winds in Spring, which too frequently destroy the Blossoms; the Fruit is also more liable to be blown down in Summer, especially if there should happen to be much Wind at the Time when the Fruit is ripe; which by falling from a great Height, will be bruised and spoiled; therefore I prefer half Standards, of about two and a Half, or three Feet in the Stem, to those which are much taller; or to plant them as Dwarfs against an Espalier, where, if skilfully managed, they will produce a large Quantity of good Fruit; and the Trees in Espalier may be more conveniently covered in Spring, when the Season proves bad, whereby there will be a greater Certainty of Fruit every Year.

These Fruits are all propagated by budding them on Plum Stocks, and will readily take upon almost any Sort of Plum, provided the Stock be free and thriving (except the *Brussels* Kind, which is usually budded on a Stock, called the *St. Julian*, which better suits this Tree, as being generally planted for Standards, than any other Sort of Plum will). The Manner of raising the Stocks, and budding these Trees, shall be treated of under their

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particular Articles, to which I refer the Reader, and shall proceed to their Planting and Management.

These Trees are all (except the two last Sorts) planted against Walls, and should have an East or West Aspect; for if they are planted full South, the great Heat causes them to be mealy before they are well eatable.

The Borders under these Walls should be six Feet wide, at least, and if it were more, the better, but I would never advise the making of them so deep as is the general Custom; for if the Earth be two Feet deep, or two and a Half at most, it is enough.

If your Ground is a wet cold Loam or Clay, you should raise your Borders as much above the Level of the Surface as it will admit, laying some Stones or Rubbish in the Bottom, to prevent the Roots from running downwards; but if you plant upon a Chalk or Gravel, it will be better to raise the Borders above either to a proper Thickness, with good loamy Earth, than to sink the Borders by removing the Chalk or Gravel; for although these are removed the whole Breadth of the Border, which we may allow to be eight Feet, and this Trench filled with good Earth, yet the Roots of the Trees will in a few Years extend this Length, and then meeting with the Chalk or Gravel, will occasion the Leaves of the Trees to turn pale, and fall off early in the Season, the Fruit will be small, dry, and ill flavoured, and the Shoots of the Trees will be weak. But where the Borders are raised upon either to their full Height, the Roots will not strike down into the Gravel or Chalk, but rather extend themselves near the Surface, where they will meet with better Soil: And as these Trees are of long Duration, and old Trees are not only more fruitful than young, but the Fruit larger and better flavoured, the providing for their Continuance is absolutely necessary.

The Soil I would in general advise for these, and all other Sorts of Fruit Trees, is fresh untried Earth, from a Pasture Ground, taken about ten Inches deep, with the Turf, and laid to rot and mellow at least twelve Months before it is used; this must be often turned, to sweeten and imbibe the nitrous Particles of the Air.

When the former Soil of the Border is taken away, this fresh Earth should be laid on; and if the Borders are filled with it two Months before the Trees are planted, the Ground will be better settled, and not so liable to sink after the Trees are planted: In filling the Borders, the Ground should be raised four or five Inches above the Level they are designed, to allow for settling.

Your Borders being thus prepared, make Choice of such Trees as are but of one Year's Growth from budding; and if your Soil is dry, or of a middling Temper, you should prefer *October* as the best Season for planting, especially having at that Time, a greater Choice of Trees from the Nurseries, before they have been picked and drawn over by others. The Manner of preparing these Trees for planting being the same of other Fruit Trees, I shall refer the Reader to the Article of *Peaches*, where he will find it largely treated of. But do not cut off any Part of the Head at that Time, unless there are any strong foreright Shoots which will not come to the Wall; they may be taken quite away.

Your Trees being thus prepared, you must mark out the Distances they are to stand, which in a good strong Soil, or against a low Wall, should be twenty Feet or more; but in a moderate one, eighteen Feet is a good reasonable

reasonable Distance; then make a Hole where each Tree is to stand, and place its Stem about four Inches from the Wall, inclining the Head thereto; and after having fixed the Tree in the Ground, nail the Branches to the Wall, to prevent their shaking, and cover the Surface of the Ground round the Root with rotten Dung, to keep out the Frost: In this State let it remain till the Beginning of *March*, when if the Weather is good, unvail the Branches, so as not to disturb the Roots; and, being provided with a sharp Knife, put your Foot close to the Stem of the Tree; and holding with your Left-hand the Bottom of the Tree, to prevent its being disturbed, with your Right cut off the Head of the Tree, if it has but one Stem, or where it may have two or more Shoots, each of them must be shortened, to about four or five Eyes above the Bud, so that the sloping Side may be toward the Wall.

In Spring, if the Weather proves dry, you must now and then give your Trees a gentle Refreshing with Water; and if you observe to water them with a Rose to the watering Pot, all over their Heads, it will greatly help them; also lay some Turf, in the Manner directed for Apples, or some other Mulch, round their Roots, to prevent their drying during the Summer Season, as new Branches are produced in Spring, observe to nail them to the Wall in a horizontal Position; and such Shoots as are produced fore-right, must be entirely displaced. This must be repeated as often as it is necessary, to prevent their hanging from the Wall, but by no Means stop any of the Shoots in Summer.

At *Michaelmas*, when the Trees have done growing, you must unvail their Branches, and shorten them in Proportion to their Strength; a vigorous Branch may be left eight or nine Inches long, but a weak one not above five or six. I suppose many People will wonder at this Direction, especially having allowed such a Distance between the Trees, believing the Wall will never be filled by this Management; but my Reason for it is, that I would have no Part of the Wall left unfurnished with bearing Wood; which must be the Case, if the Branches are left to a greater Length at first; for it seldom happens, that more Buds than two or three shoot for Branches; and these are, for the most Part, such as are at the extreme Part of the last Year's Wood; so that all the lower Part of the Shoots become naked, nor will they ever after produce Shoots; and this is the Reason we see so many Trees which have their bearing Wood situated only in the extreme Part of the Tree.

When you have shortened the Shoots, be sure to nail them as horizontally as possible, for upon this it is that the future Good of the Tree chiefly depends.

The 2d Summer observe, as in the 1st, to displace all fore-right Shoots, as they are produced, nailing in the other close to the Wall horizontally, so that the Middle of the Tree may be kept open; never shorten any of the Shoots in Summer, unless to furnish Branches to fill vacant Places on the Wall; and never do this later than *April*, for Reasons given in the Article of *Peaches*. At *Michaelmas* shorten these Shoots as directed for the first Year; the strong ones may be left nine or ten Inches, and the weak ones six or seven at most.

The following Year's Management will be nearly the same, but observe, that Apricots produce their Blossom

Buds, not only upon the last Year's Wood, but also upon the Curfons or Spurs, which are produced from the two Years Wood; great Care should therefore be had in the Summer Management, not to hurt or displace these; observe also to shorten your Branches at the Winter Pruning, so as to furnish fresh Wood in every Part of the Tree, and be sure to cut out entirely all luxuriant Branches, or displace them as soon as they are produced, which, if left to grow, would exhaust the Nourishment from the bearing Branches, which, in my Opinion, cannot be too strong, provided they are kindly; for the more vigorous your Tree is, the more likely it is to resist the Injuries of the Weather; and I have often seen Trees brought to so weak a Condition, as to be able only faintly to blow their Blossoms, and then most or all of the bearing Branches have died; which has given Occasion to the Owner to imagine it was the Effect of a Blight, when, in reality, it was only for Want of right Management. I am fully persuaded, half the Blights we hear complained of, proceed from nothing else but this.

These few Rules, well executed, together with a little Observation and Care, will be sufficient, and I believe the Reader will find what has been said, if duly attended to, will answer his Design; for, without diligent Observation, there can be no such Thing as a skilful Manager, let him have ever so many or good Instructions laid down to him.

The *Brussels* and *Breda* Apricots, being for the most part, planted for Standards, will require very little Pruning; only observe to take out all dead Wood, or such Branches as cross each other; this must be done early in Autumn, or in Spring after the cold Weather is past, that the Part may not Canker where the Incision is made.

ARMERIUS, Sweet William. See *Dianthus*.

ARNICA. L. G. P. *Doronicum*. B. P. *Leopardsbane*.

The Characters are,

The common Empalement is scaly, and shorter than the Rays of the Flower. It hath a compound Flower, the Border or Rays, being composed of many female Flowers, which spread open, and cut into three Parts at their End; the Disk, or Middle, has many hermaphrodite Flowers, which are tubulous, and are cut into three unequal Segments at the Brim; these have each five short Stamina, which are crowned with oblong Summits. The female Flowers have also five Awl-shaped Stamina, but no Summits; in the hermaphrodite Flowers the Germen is situated below the Flower, supporting a slender short Style, crowned by a bifid Stigma. The Germen afterward becomes a single oblong Seed, crowned with long slender Down.

The Species are,

1. ARNICA foliis ovatis integris, caulinis geminis oppositis. Lin. Sp. Plant. 884. Arnica with entire oval Leaves, and those on the Stalks growing opposite by Pairs. Leopardsbane with a Plantain Leaf.

2. ARNICA foliis alternis serratis. Hall. Helvet. 737. Arnica with sawed Leaves growing alternately. Leopardsbane with a sweet Root.

3. ARNICA foliis ovatis denticulatis. Lin. Sp. Plant. 885. Arnica with oval indented Leaves. Dandelion with an Elecampane Leaf.

The 1st Sort grows naturally upon the Alps, and many Mountains in Germany, and other cold Parts of Europe, and is greatly esteemed by the Germans for its medicinal

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dicinal Qualities, where it is prescribed by this Title of *Arnica*. It is also ranged among the medicinal Plants in many Dispensatories, by the Title of *Doronicum*.

This Plant, when placed in a proper Soil and Situation, increases greatly, for it sends out thick fleshy Roots, which spread very far under the Surface; these put out many oval entire Leaves, from between which the Flower Stems arise, which grow about a Foot and a Half high, having two or three Pair of Leaves growing opposite upon each, and the Top is terminated by a single yellow Flowers composed of many Florets, like those of Dandelion. These are succeeded by oblong Seeds, which are crowned with Down, whereby they are dispersed to a considerable Distance when ripe. It flowers in April and May, and the Seeds ripen in September.

This Plant delights in a moist shady Situation; it may be propagated by parting the Root in Autumn, when the Stalks begin to decay, or by Seeds sown in Autumn, soon after they are ripe, for those sown in Spring often fail; but if they are permitted to scatter, the Plants will come up the following Spring, so that when one Plant is obtained, it will increase fast enough without other Care, but to keep it clean from Weeds.

The 2d Sort grows naturally on the Mountains of *Bohemia*, and in *Siberia*, from whence I received the Seeds. The Roots of this Sort are much jointed, and divide into many irregular fleshy Offsets, which are variously contorted, from whence many superstitious Persons have been led to imagine, that the Roots would expel the Poison of Scorpions, and cure the Wounds made by the Bite of that Animal. It is a very hardy Plant and is propagated as the former.

The 3d Sort grows naturally at the *Cape of Good Hope*, from whence the Seeds have been brought to Europe. This Sort will not live here through the Winter in the open Air, so the Plants must be kept in Pots, which should be placed under a common hot Bed Frame in Winter, to screen it from Frost, but should enjoy the free Air at all Times, in mild Weather. It propagates by Roots, and Seeds in Plenty.

ARTEDIA. *Lin. Gen. Plant.* 249. We have no English Name for this Genus.

The Characters are,

It is an umbelliferous Plant, the greater Umbel is spread open, and composed of many small ones, the Involucrum of the large one is composed of ten oblong oval Leaves, which extend the Length of the Umbel, and are cut at their Tips into three Parts. The Involucrum of the small Umbels have but three narrow Leaves, which are longer than the Umbel; the Rays of the large Umbel are difform, those of the small ones in the Disk are male, and the Rays are hermaphrodite Flowers. They have five Petals, which are erect, Heart-shaped, and turned inward. These have each five slender Stamina, crowned with roundish Summits; those Flowers which compose the Rays, have a small Germen at Bottom, supporting two reflexed Styles, crowned by a single Stigma. The Germen afterward becomes a roundish compressed Fruit, with a leafy Border, which splits into two, and contains two oblong Seeds, with scaly Borders.

The Species are,

1. ARTEDIA *seminibus squamatis*. *Hort. Cliff.* 89. *Artedia* with squamous Seeds. This is the *Thapsia Orientalis*. *Tourn.* Eastern scorching Carrot with a till Leaf,

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and an elegant crenated Seed.

2. ARTEDIA *seminibus aculeatis*. *Hort. Cliff.* 89. *Artedia* with prickly Seeds. Greater Hedge Parsley of *Tanger*, resembling Carrot.

The 1st is a Native of the *East*, *Ravwolf* found it growing upon Mount *Libanus*. This is an annual Plant, whose Stalks rise about two Feet high sending out a few side Branches; which are garnished with narrow Compound Leaves resembling those of Dill, the Extremity of the Stalk is terminated by a large Umbel of white Flowers, composed of five unequal Petals, those on the Outside being much larger than the other. These are succeeded by roundish compressed Fruit, each having two Seeds, whose Borders are scaly.

The 2d Sort grows upon the *African Shore* in the *Mediterranean*, and in *Spain*, from whence I received the Seeds. This is also an annual Plant, with an upright Stalk near three Feet high, puts out many side Shoots, the Leaves are hairy, and greatly resemble those of the common Carrot; the Stalks are terminated by Umbels of large white Flowers, shaped like the former, and succeeded by a prickly Fruit, composed of two Seeds.

Both these Plants decay as soon as they perfect their Seeds, and many Times before they are ripe, in *England*; for unless the Seeds are sown in Autumn, and the Plants come up before Winter, they rarely produce good Seeds here. The Seeds should be sown on a warm Border where the Plants are to remain, for they will not bear transplanting. All the Care they require is to keep them clean from Weeds, and thin the Plants to six or eight Inches Distance. They flower in June, and their Seeds ripen in the End of August.

ARTEMISIA. Mugwort.

The Characters are,

The common Emplacement is scaly and round, as are also the Scales. The Flower is composed of hermaphrodite and female Flowers, the Border being ranged with female Flowers, which have a small Germen at Bottom, supporting a slender Style, crowned by a bifid Stigma. The hermaphrodite Flowers compose the Disk, or Middle; these are tubulous, and cut into five Parts at the Brim; in the Center is placed the Germen, with the like Style and Stigma as the female, and is accompanied by five hairy Stamina, which are crowned by cylindrical Summits, which are indented in five Parts. The Germen afterward becomes a single naked Seed, sitting upon a naked Placentia.

The Species are,

1. ARTEMISIA *foliis pinnatifidis planis incisus subtus tomentosis, racemis simplicibus floribus ovatis radis quinquefloro*. *Lin. Sp. Plant.* 348. Mugwort with plain cut Leaves, ending in many Parts, woolly underneath, with single Spikes of Flowers, which are oval, and the Rays composed of five Florets. This is the Common Mugwort.

2. ARTEMISIA *foliis lanceolatis subtus tomentosis integerrimis dentatisque*. *Lin. Sp. Plant.* 848. Mugwort with Spear-shaped Leaves which are entire, and indented on their Edges, and their under Side woolly.

The 1st Sort grows naturally on Banks, and by the Side of Foot Paths in *England*, so is rarely admitted into Gardens, where it would soon become a troublesome Weed, for the Roots creep far under the Surface of the Ground, and unless stopped, they will soon spread over a large Space, and the Seeds being carried by the Wind

to some Distance, the Plants will come up the following Spring; but as this Plant is used in Medicine, I have mentioned it here. It flowers in *June*, and the Herb is then in Perfection for Use.

The *Moxa*, so famous in the Eastern Countries for curing the Gout by burning the Part affected, is the *Lanugo*, or Down, which is on the upper Part of the Leaves of a Sort of Mugwort, supposed to be different from our common Sort; but the dry Samples I have seen brought to England for that, appear to differ in nothing but the Size of the Plant, that being much less; and I suppose the soft Down of the common Sort, or of any other Plant will answer the Purpose full as well.

There are two Varieties mentioned in Books of the common Mugwort, one with green, and the other purple Stalks; these are Accidents arising from the Soil and Situation: but there are two Varieties, one with white variegated Leaves, and the other with yellow, which are kept in some Gardens for the Sake of Variety; but in order to preserve their Stripes, the Roots must be planted in poor Ground, for in a rich Soil they are very subject to become plain.

The 2d Sort grows naturally in *Siberia*; this rises up with single Stalks about two Feet high, which are garnished with plain, narrow, Spear-shaped Leaves, cut into acute Segments on their Edges, somewhat like those of Buckhorn Plantain; the Flowers come out from the Wings of the Leaves in small loose Spikes, and near the Top are often single; these are larger than the common Sort, and of a pale Yellow Colour.

This Sort is as hardy as the common Sort, and multiplies as fast, so is only preserved for Variety.

ARTICHOKE. See also *Cinara* and *Cynara*.

We have two Sorts of Artichokes, which are cultivated in the *English* Gardens, which we shall distinguish here only by the Names they are generally known among the Gardeners, and reserve their farther Distinctions to their *Latin* Titles.

The best Sort is what the Gardeners call the *Globe* Artichoke. This hath large Heads, with broad-brown Scales, which turn inward; the fleshy Part at the Bottom of the Scales is very thick, therefore is much preferred to the other, which is called the *French* Artichoke. The Stalks of this Sort do generally grow taller, and the Heads are smaller, and shaped more conical than those of the other Sort. The Scales are narrower, of a greener Colour, and turn outward. The fleshy Part which is eaten is not near so thick, and hath a disagreeable perfumed Taste: this was almost totally rooted out of the *English* Gardens before the hard Frost in 1712, when the greatest Part of the Roots of the other Sort were destroyed, so many Persons were supplied the following Spring with Plants from *Guernsey*, where they cultivate only the latter Sort; but since the other has been increased again, this green Sort has been rooted out, to make Way for the *Globe* Artichoke.

The Manner of propagating this Plant is from Slips or Suckers taken from the old Roots, in *February* or *March*, which, if planted in a good Soil, will produce large fair Fruit the Autumn following; but as this is a Plant which few Gardeners, that have not been instructed in the Kitchen Gardens near *London*, understand to manage well, I shall be the more particular in my Di-

rections about it.

At the latter End of *February*, or in *March*, according to the Earliness of the Season, or Forwardness of the old Artichoke Stocks, will be the proper Time for dressing them, which must be thus performed; with a Spade remove all the Earth from about your Stock, down below the Part from whence the young Shoots are produced, clearing the Earth from between the Shoots, so as to be able to judge of the Goodness of each, with their proper Position upon the Stock; then make choice of two of the clearest, straightest, and most promising Plants that are produced from the under Part of the Stock, which are much preferable to the strong thick Plants which generally grow upon the Crowns of the Roots, for these have hard woody Stems, so do never produce good Fruit, but generally are what the Market People call Rogues, which have very little Bottom, and the Scales of their Heads are irregularly placed; in slipping off the Buds you must be careful not to injure the Plants which you are to let remain for a Crop; then with your Thumb force off all the other Plants and Buds close to the Head of the Stock, from whence they are produced, being very careful not to leave any of the Buds, and with your Spade draw the Earth about the two Plants which are left, and with your Hands close it fast to each of them, separating them as far asunder as they can conveniently be placed without breaking them, observing to crop off the Tops of the Leaves which hang down, with your Hands; the Ground being levelled between the Stocks, you may sow thereon a small Crop of Spinage, which will be taken off before the Artichokes will cover the Ground, and be sure to keep them clear from Weeds; and toward the latter End of *April*, or the Beginning of *May*, when your Plants begin to shew their Fruit, you may carefully look over the Stocks, and draw up all young Plants from them which have been produced since their Dressing, and cut off all Suckers produced from the Stems of the Artichokes, leaving only the principal Head, by which Means the Fruit will be larger; when your Artichokes are fit to gather, you must break, or cut them down close to the Surface of the Ground, that the Stocks may make strong fresh Shoots before the End of *October*, which is the Season for Earthing, or as the Gardeners term it, Landing them up, which is thus done:

Cut off all the young Shoots quite close to the Surface of the Ground; then dig between every Stock, raising all the Earth between each Row of Stocks into a Ridge, as is done in the common Method of trenching Ground, so that the Row of Artichokes may be exactly in the Middle of each Ridge, this will be sufficient to guard them against Frost; and I would here recommend it to the Publick, as infinitely preferable to long Dung, which is often used by the Unskilful, and is the occasion of their Fruit being small; and almost without any Bottoms; for there is not any Thing so hurtful, as new Dung being buried near, or laid about them. Observe, that although I have mentioned *October* as the Season for Earthing them, yet if the Weather proves mild, it may be done any Time in *November*.

Since we have experienced, that, in very severe Frosts, these Roots are sometimes destroyed, therefore it is proper to give some Directions to prevent it; although this rarely happens in dry Ground, in which we have but few

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Instances of their being killed, except in the hard Frosts of 1683, and 1712. In these two Winters most of the Artichokes were destroyed in *England*; in the last of these Winters, it happened from the little Care which was taken of them, there having been no Frost for so many Years before, which had injured them, that few People used any Care to preserve them; but since that hard Frost, many People have run into the other Extreme of covering all their Roots of Artichokes with long Dung every Winter, which is a very bad Method, because the Dung lying near the Roots, is very apt to rot the best Plants; therefore I would advise the Earthing or Landing of the Artichokes to be deferred till the Middle, or latter End of *November*, provided the Season continues mild; and towards *Christmas*, if there is any Danger of severe Frosts, to lay a Quantity of long Dung, Pease Haulm, Tanners Bark, or any other light Covering over the Ridges of Earth, which will keep out the Frost; and this being at a Distance from the Roots, will not injure them; but this Covering should be carefully taken off the Beginning of *February*, or sooner, provided the Season is mild, or at least so soon as the Weather is so, otherwise the Plants will be injured by its lying too long upon them.

It will also be a good Method, when any of the Roots are dug up in Autumn, to bury them deep in the Ground in a Pit till Spring, or lay them in a Heap, so as they may be easily covered in hard Frosts; and these may be a Supply, if those in the Ground are destroyed.

When you have thus earthed them up, you have nothing more to do till *February* or *March*, by which Time they will have grown through the Ridge of the Earth; and, when the Weather is proper, must be dressed as was before directed.

When you have a Mind to make a new Plantation, after having dug and buried some very rotten Dung in the Ground allotted for that Purpose, make Choice of such of your Plants as were taken from old Stocks, which are clear, sound, and not woody, having some Fibres to their Bottom; then with your Knife cut off that knobbed woody Part, which joined them to the Stock; and if that cuts crisp and tender, it is a Sign of its Goodness, but if tough and stringy, throw it away as good for nothing, and cut off the large outside Leaves pretty low, that the Middle, or Heart Leaves, may be above them. Your Plants being thus prepared (if the Weather is very dry, or the Plants have been at any Time taken from the Stocks, it will be proper to set them upright in a Tub of Water for three or four Hours before they are planted, which will greatly refresh them), you must then proceed to Planting, which must be done by ranging a Line across the Ground, in order to their being placed exactly in a Row, and, with a Measure Stick, plant them at two Feet Distance from each other in the Rows, and if designed for a full Crop, five Feet Distance Row from Row; your Plants must be set about four Inches deep, and the Earth closed very fast to their Roots, observing if the Season proves dry, to give them water two or three Times a Week, until they are growing, after which they seldom require any.

N. B. You may sow a thin Crop of Spinage upon the Ground before you plant your Plants, observing to clear it from about them after it is come up.

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These Plants, in a kindly Season, or a moist Soil, will produce the largest and best Artichokes some Time in *August* and *September*, after all those from the old Stocks are past; so that if you intend to continue your Artichokes through the whole Season, you must make a new Plantation every Year, otherwise you cannot possibly have Fruit longer than two or three Months.

If any of those planted in Spring, should not Fruit in Autumn, you may, at the Season of Earthing your Roots, tie up the Leaves with a small Willow Twig, &c. and lay the Earth up close to it, so that the Top of the Plant may be above Ground, and when the Frost comes on, if you will cover the Top with a little Straw, or Pease Haulm, to prevent their being killed by it, these Plants will produce Fruit in Winter, or early in the Spring.

But in those Plantations where you intend to plant other Things between your Artichokes, you must allow nine or ten Feet between the Rows, as is often practised by the Kitchen Gardeners near *London*, who sow the Ground between with Radishes or Spinage, and plant two Rows of Cauliflowers, at four Feet Distance Row from Row, and two Feet and a Half Distance in the Rows between them; so that there are always five Feet allowed for the Artichokes to grow; and in *May*, when the Radishes or Spinage are taken off, they sow a Row of Cucumbers for Pickling, exactly between the two Rows of Cauliflowers, and at three Feet Distance from each other; and between the Rows of Cauliflowers and the Artichokes, plant a Row of Cabbages or Savoys for Winter Use, which, when the Cauliflowers are drawn off, and the Artichokes gathered, will have full Liberty to grow; and by this Means the Ground is fully employed the whole Season. This has long been the Practice of the Kitchen Gardeners near *London*, who pay large Rents for their Land, so are obliged to get as many Crops in a Year from it as possible.

In those which are planted at five Feet Distance Row from Row, you may plant in every other Row a Line of Cabbages or Savoys for Winter Use, which will be gone by the Time of landing them up; in the doing of which you must lay the whole five Feet of Earth into one Ridge, except the Ground be extreme stiff, or the Plants young, in both which Cases you may lay only three Feet and a Half of the Ground in the Ridge over the Roots, and the Remainder may be laid in a small Ridge between; the same Compass of Ground must also be allowed where they are planted at a wider Distance.

And if in Spring your Stocks shoot very weak, which may have been occasioned by hard Frost, or too much Wet, you must then uncover them, and with a Spade loosen and break the Earth about them, raising a small Hill about each Stock, levelling the rest between the Rows, which will greatly help them; and in three Weeks, or a Month after, they are commonly fit to slip.

Those Artichokes which are planted in a moist rich Soil, will always produce the largest and best Fruit; so that where such a Soil can be obtained, it will be proper to make a fresh Plantation every Spring to succeed the old Stocks, and supply the Table in Autumn. But the Roots will not live through the Winter in a moist Soil, so that your Stocks which you intend should remain, to supply the Table early, and to furnish Plants, should be in

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in a drier Situation. You should always observe to plant these in an open Situation, and not under the Drip of Trees, where they will draw up very tall, and produce small insignificant Fruit.

ARTICHOKES of *Jerusalem*. See *Helianthus*.

ARUM. Wake Robin, or Cuckow Pint.

The Characters are,

The Flower hath a large oblong Spatha, which is closed at the Bottom, compressed in the Middle, and coloured within; the Spadix is single, shaped like a Club at the Top, and shorter than the Spatha, upon which the Germen are situated. It hath no Petals nor Stamina, but many four cornered Summits, sitting close to the Germen, with a double Row of Hairs between them, which adhere to the Spadix. There are many Germen which surround the upper Part of the Spadix, which are oval, having no Styles, but have bearded Stigma: The Germen afterward become globular Berries, with one Cell, having round Seeds.

This Plant is called Wake Robin, from the sharp acrid Taste, which, if eaten, will occasion a violent Pain in every Part of the Mouth and Throat, attended commonly with a great Defluxion of Water.

The Species are,

1. ARUM *acaule foliis hastatis integerrimis spadice clavato*. Hort. Cliff. 434. Arum without Stalk, Spear-shaped Leaves, which are entire, and a Club-shaped Spadix. This is the *Arum vulgare*, C. B. P. 195. Common Arum, or Wake Robin, with spotted and plain Leaves.

2. ARUM *acaule foliis hastatis acutis petiolis longissimis spatbâ maximâ erectâ*. Arum without Stalk, pointed Spear-shaped Leaves, with very long Petals, and a large upright Spatha. Largest Italian Arum, with white Veins.

3. ARUM *acaule foliis hastatis spatbâ declinatâ filiformi-subulatâ*, Lin. Sp. Plant. 966. Arum without Stalk, Spear-shaped Leaves, and a declining Spatha, which is narrow and Awl-shaped. *Arisarum flore intenuem*, &c. T. 161. Friars Cowl with a Flower ending in a slender Tail.

4. ARUM *acaule foliis cordato-oblongis spatbâ bifidâ spadice incurvâ*, Hort. Cliff. 435. Arum without Stalk, oblong Heart-shaped Leaves, a bifid Spatha, and an incurved Spadix. Greater broad leaved Friars Cowl.

5. ARUM *acaule foliis lanceolatis spadice setaceo declinato*. Hort. Cliff. 345. Arum without Stalk, Spear-shaped Leaves, and a bristly declining Spadix. Narrow-leaved Friars Cowl of *Dioscorides*.

6. ARUM *acaule foliis hastato-cordatis acutis angulis obtusis*. Hort. Cliff. 434. Arum without Stalk, pointed Spear-Heart-shaped Leaves, with obtuse Angles.

7. ARUM *acaule foliis ternatis*. Flor. Virg. 113. Three leaved Arum without Stalk. Smaller three leaved Arum of *Virginia* with a green Pistil.

8. ARUM *foliis pedatis, foliolis lanceolatis integerrimis æquantibus spatbam spadice longiorem*. Arum with branching Leaves, composed of Spear-shaped entire Lobes, which are equal, and the Spatha much longer than the Spadix. *Dracunculus polyphyllus*. Common Dragon.

9. ARUM *foliis pedatis, foliolis lanceolatis integerrimis superantibus spatbam spadice breviorem*. P. L. Arum with branching Leaves, the upper being composed of Spear-shaped entire Lobes, and the Spatha shorter than the Spadix. Smaller dwarf Arum with many Leaves.

10. ARUM *acaule foliis trilobis flore sessile*. Flor. Zeyl. 326. Three leaved Arum without Stalks, and a Flower

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growing close to the Root. Broad leaved low Arum of *Ceylon* with a scarlet Pistil.

11. ARUM *acaule foliis peltatis ovatis repandis basi semibifidis*. Hort. Cliff. 434. Arum without Stalk, Target-shaped oval Leaves, waved and sinuated at their Edges, and divided into two Parts at their Base. Greatest Egyptian Arum, vulgarly called *Colocasia*.

12. ARUM *acaule foliis cordatis nervosis floribus sessilibus*. Arum without Stalk, nervous Heart-shaped Leaves, and Flowers without Petals. American Arum with a Beet Leaf called Scunk Weed.

13. ARUM *acaule foliis cordatis angulatis divaricatis*. Lin. Sp. Plant. 966. Arum without Stalk, and Heart-shaped Leaves, which are angular, and spread from each other. Arum without Stalk, and Spear-shaped Leaves.

14. ARUM *acaule foliis cordatis obtusis mucronatis angulis rotundatis*. H. C. 435. Arum without Stalk, blunt Heart-shaped Leaves, which are pointed, and the Angles rounded. This is commonly called Edder in America.

15. ARUM *acaule foliis peltatis ovatis integerrimis basi semibifidis*. H. C. 453. Arum without Stalk, and oval Target-shaped Leaves, whose Base are slightly divided in two Parts. Eatable Arum with a Water Lily Leaf.

16. ARUM *acaule foliis sagittatis acuminatis nervosis*. Arum without Stalk, and Lance-shaped Leaves, which are pointed and ribbed. Greatest Egyptian Arum, or *Colocasia* with blackish Stalks.

17. ARUM *acaule foliis hastatis acuminatis spatbâ mucronatâ revolutâ*. Arum without Stalk, Lance-shaped pointed Leaves, and a pointed Spatha, which is twisted. Dwarf broad leaved Arum of *Ceylon* with a purple Pistil.

18. ARUM *caulescens foliis sagittatis spatbâ declinatâ clausâ*. Stalky Arum with Lance-shaped Leaves, and a declining Spatha, which is shut up. Tree-like Arum with Lance-shaped Leaves; Commonly called Dumb Cane.

19. ARUM *acaule foliis oblongo-cordatis auriculis rotundioribus*. Arum without Stalk, oblong Heart-shaped Leaves, with round Ears. Arum with large Heart-shaped Leaves, and a red knotted Root.

The 1st Sort grows naturally in Woods, and on shady Banks in most Parts of England, so is seldom admitted into Gardens, but being a medicinal Plant, it is here inserted to introduce the other Species. There are two Varieties of this, one with plain Leaves, and the other hath Leaves full of black Spots; but these are only accidental Varieties, which arise from the same Seeds. The Roots of this are ordered by the College of Physicians to be used in a Powder which bears the Title of the Plant; but these Roots are generally gathered in the Spring, when the Leaves are in full Vigour, so that the Roots shrink and soon loose their pungent Quality; but those which are taken up when the Leaves decay, will continue good a whole Year, and retain their Pungency the same as when first taken up. The not observing this, has brought the Medicine into Disrepute. It flowers in April, and the Seeds ripen in July.

The 2d Sort grows naturally in Italy, Spain, and Portugal, from whence I received the Seeds. The Leaves are very large and rise a Foot and a half high, running out to a Point; these are finely veined with white, interspersed with black Spots, which, together with the fine shining green of their Surface, make a pretty Variety. The Flowers grow near a Foot high, and have very long upright

upright Spathas, which are of a pale green, inclining to white; these appear the End of *April*, or Beginning of *May*, and the Seeds are ripe in *August*; this propagates very fast by Offsets from the Root, and will thrive in any Soil or Situation. The best Time to transplant them is from the Time the Seeds are ripe, to the End of *October*, by which Time they will be putting out new Fibres.

The 3d, 4th, and 5th Sorts have been generally separated from this Genus, and were distinguished by the Title of *Arisarum*, or Friar's Cowl, from the Resemblance the Flower has in Shape to the Hoods or Cowls worn by that Order. These are very low Plants, their Leaves having very short Foot Stalks, and the Flowers grow close to the Ground. They flower in *April*, but seldom produce Seeds in *England*; they multiply fast by Offsets, and should have a shady Situation: The Time for transplanting the Roots is the same as for the former. They are preserved in some Gardens for Variety, but have little Beauty to recommend them.

The 6th and 7th Sorts grow naturally in *Virginia* and *Carolina*, from whence I received their Roots; these never rise with Stalks, but their Leaves arise immediately from the Roots, having short Foot Stalks; the Flowers, which have short Foot Stalks, come up between their Leaves; they appear in *May*, but having little Beauty, the Plants are only kept in Botanic Gardens for Variety. They will live in the open Air, if planted in a sheltered Situation, or if the Surface of the Ground is covered with Tan to keep out the Frost, and will thrive better in the full Ground, than in Pots. They are propagated by Offsets, for they do not produce Seeds in *England*.

The 8th Sort is the common Dragon, which is used in Medicine, and is preserved in Gardens to supply the Markets: It grows naturally in most of the Southern Parts of *Europe*. This Plant hath a large tuberous fleshy Root, which, in the Spring puts up a stait Stalk about three Feet high, spotted like the Belly of a Snake; at the Top it spreads out into Leaves, which are cut into several narrow Segments, almost to the Bottom; these are spread open like a Hand; at the Top of the Stalk the Flower is produced, which is in Shape like the Common *Arum*, having a very long Spatha of a dark purple Colour, standing erect, with a large Pistil of the same Colour, so that when it is in Flower, it makes no unpleasing Appearance; but the Flower hath so strong a Scent of Carrion, that few Persons can endure it; for which Reason it hath been banished most Gardens; but was it not for this, a few of the Plants might merit a Place in Gardens for the Oddness of the Flower. It is very hardy, so will grow in any Soil or Situation, and propagates fast by Offsets from the Root. The Time to transplant it, is in Autumn, when their Leaves decay: It flowers in *June* and *July*, and the Stalks decay in *September*. There is a Variety of this with variegated Leaves and Stalks, it is equally hardy with the common Sort, and may be propagated in Plenty, but should be planted in poor Ground, in order to prevent it from becoming plain, which it is apt to do in rich Land.

The 9th Sort grows naturally in moist Places in *Virginia* and *New England*, but is very difficult to preserve long in a Garden. I received some Roots of this from *New England*, which continued two Years; but the Soil

being dry, they decayed in Summer. These should have a moist shady Situation, otherwise they will not thrive: The Leaves are divided like those of the former, but are smaller, and rarely grow more than nine Inches high; the Flowers are like those of the common *Arum*, but the Pistil is longer than the Spatha. It flowers in *June*, and the Stalks decay in Autumn.

The 10th Sort grows naturally in *Ceylon*, and some other Parts of *India*, so is very impatient of Cold: It is a Plant of humble Growth; the Leaves come up from the Root, having Foot Stalks about four Inches long; these are divided into three Lobes, which terminate in Points; the Flower rises immediately from the Root, standing on a very short Foot Stalk; the Spatha is long, erect, and of a fine Scarlet within, as is also the Pistil. This usually appears in *May*, and the Leaves decay in *August*, but new ones soon after rise from the Root. This Plant must be placed in the Tan Bed of the Bark Stove. It is propagated by Offsets from the Root, which come out in Plenty when the Plants are in Health.

The 11th, 13th, 14th, 15th, and 16th Sorts, have mild Roots, which are eaten by the Inhabitants of all the hot Countries, where they grow naturally, and some of the Sorts are cultivated by the Inhabitants of the Sugar Colonies, as esculent Plants, their Roots being constantly eaten; as also are the Leaves of some of the Sorts, particularly the 15th, which they call *Indian Kale*: The Leaves of this are boiled, and supply the Want of other Greens. As there is a constant succession of these all the Year, so a small Spot of Ground, planted with these Roots, will be sufficient to supply a large Family. It is esteemed a wholesome Green; and in those Countries where many of the common *European* Vegetables are with Difficulty produced, this proves a good *Succedaneum*; but they seem to make little Distinction of the Species; for I have received the Roots of three Sorts, by the common Title of *Edder*; but I suppose the 14th Sort is the most commonly cultivated there for their Roots. The 16th Sort has not been many Years introduced among them, for it came originally from the *Spanish West-Indies*, where it grows in great Plenty. Both these have larger Roots than the 15th, for which Reason they are preferred to it.

All these Sorts are preserved by those who are curious in collecting exotics, for the Variety of their Leaves; for their Flowers have very little Beauty, nor do they often appear in this Country. The Plants are propagated easily by Offsets from their Roots, which they put out plentifully: These must be planted in Pots filled with rich Earth, and plunged into a hot Bed, to promote their taking Root; and if they are afterward continued in the Bark Stove, they will make great Progress, and their Leaves will be very large. They may be kept in a dry Stove, upon Shelves, after they are well established in the Pots, but will not be so strong as the other. These Sorts are too tender to thrive in the open Air in *England*, at any Time of the Year, so should constantly remain in the Stove, where a Plant or two of each Sort will make a pleasing Variety with their large Leaves, which continue through the Year.

The 12th Sort grows naturally in *North America*. This requires a moist Soil, and shady Situation, but is hardy in respect of Cold. It flowered two Years in the Garden at *Chelsea*, but in a very dry Season decayed.

ed. The Flowers came up before there was any Appearance of Leaves; the Spatha was large, and the Pistil short and blunt; the female Flowers were ranged each between a Sort of Checque Work, which was diagonal to the Pistil; the Flower decayed without any Appearance of Seed.

The Roots of the 17th Sort I received from India; this annually flowers in May; the Leaves grow near the Ground, having short Foot Stalks; they are divided into three sharp pointed Lobes; the Flower comes up immediately from the Root, upon a short Foot Stalk; the Spatha is long and turns downward, but the Pistil stands erect: They are both of a very deep purple Colour, and smell almost like the Flower of Dragon; this never hath any Appearance of Seeds, but is propagated by Offsets from the Roots. It is tender, so must be constantly kept in the Bark Stove, otherwise it will not thrive in England.

The 18th Sort rises to the Height of six or seven Feet, with a green jointed Stalk, as large as a walking Stick; the Leaves are placed irregularly at the Top of the Stalks, growing in a Cluster: These are oblong, and of a light green Colour; from between the Leaves the Flowers come out on every Side of the Stalk; these have a long Spatha of a pale green Colour, marked in every Part with white Spots: They have no Foot Stalks, but sit close to the Stem of the Plant; at their first Appearance they stand erect, soon after they are horizontal, and in a little Time they decline downward; their lower Part is swelling so far as the Flowers are ranged on the Pistil, above which it is greatly contracted, and toward the Top enlarges again, where it is a little open, so as to shew the naked Part of the Pistil, but is twisted again at the Top. All the lower Part closely folds over the Pistil, so that it is scarcely discernable, unless the Spatha is opened, which can only be done on one Side, the other adhering closely to the Pistil, so far upward as the Flowers extend, the naked Part of the Pistil only being separated from it; so that the female Flowers and Stamina are ranged only upon one Side of the Pistil, in which it differs from all the other Species which I have seen.

It grows naturally in the Sugar Islands, and other warm Parts of America, chiefly in the low Grounds; the whole Plant abounds with an acrid Juice, so that if a Leaf or Part of the Stalk is broken, and applied to the Tip of the Tongue, it occasions a very painful Sensation, and occasions the salivary Ducts to swell, and brings on on a great Defluxion of Saliva; the Stalks of this Plant are sometimes applied to the Mouths of the Negroes by way of Punishment. It is propagated by cutting off the Stalks into Lengths of three or four Joints, which must be laid to dry six Weeks or two Months; for if the wounded Part is not perfectly healed over before the Cuttings are planted, they will rot and decay: These should be planted in small Pots filled with light sandy Earth, and plunged into a moderate hot Bed of Tan, being careful that they have little Wet, until they have made good Roots; when they are well established at Bottom, some of them may be placed in a dry Stove, and others plunged into the Tan Bed in the Bark Stove, where they will make the greatest Progress, and produce more Flowers than the others. It is tender, so must be constantly kept in the Stove, and should have very little Wet in Winter.

The 19th Sort grows low; the Foot Stalks of the Leaves being very short, and furrowed; the Leaves are near two Feet long, and fifteen or sixteen Inches broad, having two broad Ears at their Base, which are round: It grows naturally at Campeachy, from whence I received the Roots and Specimens, but they have not yet flowered in England. This Sort is tender, so must be constantly kept in the Bark Stove, and treated as other tender exotics, from hot Countries. It is propagated by Offsets from the Roots, for all these Species which are Natives of hot Countries never produce Seeds in England.

ARUM ÆTHIOPICUM. See Calla.

ARUM SCANDENS. See Dracontium.

ARUNDO, Lin. Gen. Plant. 76. The Reed.

The Characters are,

It is of the Grass Tribe, the Flowers grow in Spikes, and are included in a Chaff which is oblong, pointed, and opens with two Valves. The Petals of the Flower are bivalve and longer than the Emplacement, having a Down at their Base, which rises almost their Length; the Flower hath three hairy Stamina, crowned with burned Summits: in the Center is situated an oblong Germen, supporting two slender Styles which are hairy and reflexed, crowned with a simple Stigma. The Germen afterward becomes an oblong pointed Seed, with long Down adhering to its Base.

The Species are,

1. ARUNDO calycibus quinquefloris paniculâ laxâ. Prod. Leyd. 66. Reed with five Flowers in each Cup, growing in loose Panicles. The common Marsh Reed.

2. ARUNDO calycibus trifloris paniculâ diffusâ. Prod. Leyd. 66. Reed with three Flowers included in each Cup, growing in diffused Panicles. The manured Reed, or Donax of Dioscorides; this is sometimes called by Gardeners the Ever-green Reed, but for what Reason I cannot imagine, because the Stalks decay every Autumn, and new Shoots arise from the Roots in the Spring.

3. ARUNDO Indica variegata seu Læonica Theophrasti. Cornut. Can. 55. Indian variegated Reed.

4. ARUNDO caule arboræo foliis acuminatis sulcatis, basi rotundioribus. Reed with a Tree-like Stalk, and pointed furrowed Leaves, which are round at their Base. This is another Species of Bambu.

5. ARUNDO caule arboræo foliis utrinque acuminatis. Reed with a Tree-like Stalk, and Leaves which are pointed at both Ends. This is the Ily Hort. Mal. Vol. 1. p. 25.

6. ARUNDO Orientalis tenuifolia caule pleno ex quâ Turca calamos parant. Tourn. Cor. 39. Eastern Reed with a narrow Leaf and a full Stalk, of which the Turks make their Writing Pens.

The 1st Sort is so very common by the Sides of Rivers and large standing Waters in England, that it is needless to say any Thing of its Culture. This is cut in Autumn, when the Leaves begin to fall, and the Stems are changed brown, for making Hedges in Kitchen Gardens, and many other Uses.

The 2d Sort, although Native of a warm Country, yet will bear the Cold of our severest Winters, in the open Ground; it dies to the Surface in Autumn, and rises again the succeeding Spring; if kept supplied with Water in dry Weather, will grow ten or twelve Feet high the same Summer; and is very proper to intermix with small Trees and Shrubs, or tall Plants and Flowers in Bosquets, where, by the Oddness of its Appearance,

it will have a good Effect, in adding to the Variety. This is propagated by parting the Roots early in the Spring, before they begin to shoot, and will, in a Year or two, in good Ground make very large Stools, so that from each Stool you may have twenty or thirty large Canes produced. This never produces any Spikes of Flowers in England.

The Stalks of this Sort are brought from Portugal and Spain, and are used by the Weavers, as also to make Fishing Rods.

The 3d Sort is supposed to be a Variety of the 2d, differing only in its variegated Leaves. But this I much doubt, because the Sort with variegated Leaves is much tenderer than the other, so must be sheltered from the Frost, otherwise it will not live through the Winter in England. The Plant never grows to a third Part of the Height of the other, and the Leaves are narrower and much shorter; whether these Differences may not be occasioned by the Weakness of the Plant, I cannot take upon me to determine; for it is well known that all those Plants which have variegated Leaves, are much weaker than the plain, and do not grow so large, nor will they resist the Cold so well. But as this is supposed to be a Native of a different Country, and by all the Writers who have mentioned it supposed to be different, so I have enumerated it among the Species.

The two Sorts of Bambu are of great Service to the Inhabitants of India, who make most of their common Utensils of the Stems of these Canes, which grow to a prodigious Magnitude in those Countries.

We have Plants of the 4th Sort in England, more than twenty Feet high; and if the Stoves in which they are kept were high enough to admit them, they would, according to Appearance, rise to twice that Height. The Shoots are of quicker Growth than any other yet known, and rise with an upright Stalk; for a strong Shoot from the Root will rise to twenty Feet in five Weeks, as I have for several Years observed. Some of these Stems are as large as a Man's Wrist, but in general as big as Walking Sticks, and when dried are as fit for that Purpose, as those imported. The Leaves are much broader than those of the 5th, particularly at their Base; these Leaves are generally put round the Tea Chests in their Package, and are fastened together so as to form a Kind of Mat.

The 5th Sort is more rare at present in Europe, though it is the most common on the Coast of Malabar.

They are both tender Plants, so will not live in this Country, unless kept in a warm Stove; and as their Roots spread very wide, they should not be confined: Therefore to have them produce strong Stems, they must be planted in large Tubs, filled with rich Earth, and plunged into the Tan Bed in the Bark Stove; and as they naturally grow in marshy low Places, they require Plenty of Water, especially when the Roots have filled the Tubs in which they were planted. When the Tubs decay, the Boards may be removed, and the Plants permitted to root into the Tan, which will encourage them to grow to a larger Size; but then there must be Care taken when the Bed is refreshed with new Tan, to leave a sufficient Quantity of the old Tan about the Roots of the Plants; for if they are too much bared, and the new Tan laid near them, when that heats, it will scorch their

Roots, and sometimes destroy the Plants. Both Sorts are propagated by Slips from the Roots, taken off in Spring, that they may be well established before Winter.

The 6th Sort is what the Turks make Writing Pens of; it grows in a Valley near Mount Athos, and on the Banks of the River Jordan. It may be managed as the Bambu, but there are none of the Plants in England.

ARUNDO SACCHARIFERA. See Saccharum.

ASARINA. Tourn. Inst. Bastard Asarum.

The Characters are,

The Empalement of the Flower is of one Leaf, which is cut into five equal Segments almost to the Bottom. The Flower is of one Leaf, of the grining Kind, having a long cylindrical Tube, and divided at the Top into two Lips, the upper one being divided into two Parts, whose Edges are reflexed. The lower Lip is slightly cut into three Parts which are obtuse; the two Lips join close together, so as to form a Kind of Snout. It hath four Stamina, two of which are longer than the other; in the Center is placed a round Germen supporting a single Style crowned by an obtuse Stigma. The Germen afterward turns to a round Husk, divided into two Cells, which are full of roundish Seeds.

The Species are,

1. ASARINA caule decumbente foliis oppositis reniformibus crenatis. Bastard Asarum with a trailing Stalk, and Kidney-shaped Leaves growing opposite, indented on their Edges. Asarina, or Rock Ground-ivy.

2. ASARINA caule erecto foliis lanceolatis amplexicaulis panicula dichotoma. Bastard Asarum with an upright Stalk, Spear-shaped Leaves which embrace the Stalks, and Spikes of Flowers coming out from the Division of the Branches. This is the Penstemon. Miteb. Gen. 14.

The 1st Sort is a low trailing annual Plant, the Branches extend little more than a Foot each Way, are weak and unless supported, they lie upon the Ground; these are garnished with Leaves like those of Groundivy, which grow opposite by Pairs; at the Wings of the Leaves the Flowers come out singly on each Side the Stalk, which are shaped like those of Snap-dragon, but have a long Tube; they are of a worn-out purple Colour at the Top, but below of an herbaceous Colour. These come out in June, and the Seeds ripen in September, which should be sown soon after, or permitted to scatter, for when sown in Spring they seldom grow. The Plants should remain where they are sown, and require no other Care but to keep clean from Weeds, and thin them where they grow too close. As there is not much Beauty in this Plant, so two or three of them will be enough in a Garden for Variety. It grows naturally in Italy and the South of France.

The 2d Sort grows naturally in North America, from whence I received the Seeds. This Plant hath upright Stalks, which grow a Foot and a Half high; and put out several Side Branches; these are garnished with oblong Spear-shaped Leaves ending in a Point, which grow opposite, and embrace the Stalks at their Base; the Flowers come out in short loose Spikes from the Divisions of the Stalks, which are shaped like those of the former but less, and of a purple Colour. They appear in June and July, and their Seeds ripen in September.

The Seeds of this Sort should be sown in Autumn, for those which are sown in Spring, seldom grow the same Year, but remain in the Ground till the following Spring.

Spring. The Plants when strong enough to remove, should be transplanted into a shady Border, which will prevent their Flowering the same Year; and in the Autumn they may be planted in the Borders of the Flower Garden. The Roots seldom last above two Years, so that young Plants should be annually raised.

ASARUM. Asarabacca.

The Characters are,

The Flower hath a thick Bell-shaped Empalement of one Leaf, which is coloured, and slightly cut at the Brim into three Parts, which are reflexed. It hath no Petals, but twelve short Awl-shaped Stamina, crowned by oblong Summits, which are fastened in the Middle to the Stamina; at the Bottom of the Empalement is inclosed a thick Germen, supporting a short cylindrical Style, crowned by a reflexed Stigma, cut into six Parts. The Germen turns to a thick Capsule having six Cells, containing several oval Seeds.

The Species are,

1. *ASARUM foliis reniformibus obtusis binis.* Lin. Sp. Pl. 442. Asarabacca with Kidney-shaped Leaves, which have two blunt Points. Common Asarabacca.

2. *ASARUM foliis reniformibus mucronatis.* Lin. Sp. Plant. 442. Asarabacca with Kidney-shaped Leaves ending in a Point. Canada Asarabacca.

3. *ASARUM foliis cordatis obtusis glabris petiolatis.* Flor. Virg. 162. Asarabacca with smooth blunt Heart-shaped Leaves having Foot Stalks. Virginia Asarabacca, with round Pistlochla Leaves marked like those of Sowbread.

The 1st Sort hath thick fleshy jointed Roots, which send out Fibres from every Part; the Leaves grow singly on short Foot Stalks, arising immediately from the Root; these are Kidney-shaped, eared at the Foot Stalk, and rounded at the Top, where they are indented; these are smooth, and of a shining green Colour: The Flowers grow upon very short Foot Stalks close to the Ground, so are hid under the Leaves. They are composed of a Bell-shaped Empalement, of a worn-out purple Colour, cut into three at the Top, where it turns backward: In the Bottom is situated the Germen, attended by twelve short Stamina, which afterward turns to a leathery Seed Vessel, divided into six Cells, which contain several roundish Seeds.

The Leaves of the second Sort are much larger than those of the first, and stand on longer Foot Stalks; these are pointed and hairy. The Flowers like those of the other Sort, grow close to the Root, but are somewhat inclining to green on their Outside, in all other Respects they agree.

The 3d Sort hath smooth blunt Heart-shaped Leaves, standing on long Foot Stalks; these are veined and spotted on their upper Surface like those of the autumnal Cyclamen; the Flowers are shaped like the others, but stand on longer Foot Stalks, and are of a darker purple Colour. These flower in April and May, and their Seeds ripen in July and August.

The 1st of these Sorts is very common, and hath been found wild in some Parts of England, though but rarely; it delights in a moist shady Place, and is increased by parting the Roots in Autumn. This is the Sort which is used in Medicine. It is chiefly used for green Emericks for Madness, and is a great Sternutatory; a small Quantity of the Powder of the Leaves being mixed with Snuff, will occasion violent Sneezings.

The Powder of this Herb has been strongly recommended by the Inhabitants of Norfolk, for Cattle troubled with the late raging Distemper, which, if blown up their Nostrils, will occasion a violent Discharge from the Head by the Nostrils; and this, they have affirmed, has cured great Numbers of Cattle, which were at the last Stage of the Distemper.

The Canada Sort is tolerably hardy, and will endure our common Winters in the open Ground, being rarely hurt but by great Frosts, or being planted in a wet Soil, which often occasions the Roots to rot in Winter. This is propagated as the other.

The 3d Sort will live in the open Air in England, being seldom injured by Frost; but if the Plants are too much exposed to the Sun in Summer, they seldom thrive well; therefore they should be planted in a Border where they may have only the Morning Sun, in which Situation they will spread and increase. These two last Sorts grow naturally in several Parts of North America.

ASCLEPIAS; Hirundinaria, or Swallow-wort.

The Characters are,

The Flower hath an Empalement of one Leaf, cut into five acute Segments; the Petal is also of one Leaf, divided into five oval Parts which are reflexed; in the Center is situated five Nectariums which encompass the Parts of Generation; these have Horns turning toward the Stamina, which are joined in a truncated Body inclosed by five Scales, open every Way. There are five Stamina scarce visible, which have five Summits, situated between the Nectariums, and inclosed by the Scales of the truncated Body. It hath two oval pointed Germen, supporting two short Styles crowned by a single Stigma. The Germen becomes two large oblong swelling Pods ending in a Point, which open with two Valves in one Cell, filled with compressed Seeds, lying over each other like Tiles on a House, and crowned with a soft Down.

The Species are,

1. *ASCLEPIAS foliis ovatis acuminatis caule erecto umbellulis proliferis.* Lin. Sp. Plant. 216. Swallow-wort with oval sharp pointed Leaves, an upright Stalk, and a proliferous Umbel. Swallow-wort with a white Flower.

2. *ASCLEPIAS foliis lanceolatis acutis caule superne subvolubili.* Lin. Sp. Plant. 216. Swallow-wort with pointed Spear-shaped Leaves, and the upper Part of the Stalk twining. Swallow-wort with a black Flower.

3. *ASCLEPIAS foliis ovatis acutis caule infirmo, umbellis simplicibus.* Swallow-wort with oval pointed Leaves, a weak Stalk, and single Umbels. Narrow leaved Swallow-wort with a yellowish Flower.

4. *ASCLEPIAS foliis revolutis linearibus verticillatis caule erecto.* Lin. Sp. Plant. 217. Swallow-wort with narrow twisting Leaves growing in Whorles, and an upright Stalk. *Apocynum marianum erectum.* Pluk. Mant. 17. Upright Dogbane of Maryland; with narrow Toad-flax Leaves and Flowers growing in an Umbel.

5. *ASCLEPIAS foliis ovalibus subtus tomentosis caule simplicissimo umbellis nutantibus.* Swallow-wort with oval Leaves, which are downy on their under Side, a single Stalk, and nodding Umbels. *Apocynum majus Syriacum erectum.* Corn. Canad. Greater upright Syrian Dogbane.

6. *ASCLEPIAS foliis ovatis subtus pilosiusculis caule simplicissimo umbellis nectarisque erectis.* Lin. Sp. Plant. 214. Swallow-wort with oval Leaves, hairy on their under Side, a single Stalk, with upright Umbels and Nectariums.

Dogbane

Dogbane with fine purple Flowers and upright Horns.

7. *ASCLEPIAS foliis ovatis subtus villosis caule simplici umbellis erectis nectariis resupinatis.* Lin. Sp. Plant. 214. Swallow-wort with oval Leaves, hairy on their under Side, a single Stalk, and upright Umbels with inclining Nectariums. Upright Dogbane of New York, with Leaves less hoary, and a worn out palish purple Flower.

8. *ASCLEPIAS foliis ovatis rugosis nudis caule simplici umbellis subsessilibus pedicellis tomentosis.* Lin. Sp. Plant. Swallow-wort with rough naked oval Leaves, a single Stalk, Umbels growing close to the Stalk, and woolly Foot Stalks. The old American Dogbane called *Wisank*.

9. *ASCLEPIAS foliis lanceolatis caule supernè diviso umbellis terminalibus congestis.* Lin. Sp. Plant. 215. Swallow-wort with Spear-shaped Leaves, the upper Part of the Stalk divided and terminated by a close Umbel. *Apocynum minus Canadense*. Smaller upright Dogbane of Canada.

10. *ASCLEPIAS foliis villosis caule decumbente.* Lin. Sp. P. Swallow-wort with hairy Leaves, and a declining Stalk, Hairy Orange-coloured Dogbane of Carolina.

11. *ASCLEPIAS foliis alternis lanceolatis caule divaricato piloso.* Lin. Sp. Plant. 217. Swallow-wort with Spear-shaped Leaves, growing alternately, and a hairy divided Stalk. Hairy New England Dogbane with a tuberosè Root, and an Orange-coloured Flower, commonly called Orange *Apocynum*.

12. *ASCLEPIAS foliis lineari-lanceolatis glabris caule fruticoso umbellis lateralibus.* Swallow-wort with smooth, narrow, Spear-shaped Leaves, a shrubby Stalk, and Umbels coming out of the Sides. *Apocynum erectum Africanum*. Par. Bat. 23. Upright African Dogbane with a hairy Fruit, and a narrow, smooth, Willow Leaf.

13. *ASCLEPIAS foliis lanceolatis glabris umbellis simplicibus lateralibus caule fruticoso.* Swallow-wort with smooth Spear-shaped Leaves, single Umbels coming from the Side of the Branches, and a shrubby Stalk. Upright African Dogbane with a broad smooth Willow Leaf, and a hairy Fruit.

14. *ASCLEPIAS foliis lanceolatis villosis acutis umbellis simplicibus erectis caule fruticoso.* Swallow-wort with hairy Spear-shaped Leaves, which are pointed, single upright Umbels, and a shrubby Stalk. Upright African Dogbane with hairy Fruit, and a broad hairy Willow Leaf.

15. *ASCLEPIAS caule erecto fruticoso, foliis subrotundis amplexicaulis, umbellis congestis.* Swallow-wort with an upright shrubby Stalk, roundish Leaves embracing it, and close Umbels. Upright shrubby Dogbane with a roundish Sea-green Leaf.

16. *ASCLEPIAS foliis lanceolatis glabris caule simplici umbellis erectis lateralibus solitariis.* Lin. Sp. Plant. 215. Swallow-wort with a single Stalk, smooth Spear-shaped Leaves, and upright single Umbels, proceeding from the Wings of the Leaves. American Dogbane with longer Almond Leaves.

17. *ASCLEPIAS foliis lanceolatis petiolatis glabris caule simplici umbellis erectis solitariis.* Lin. Sp. Plant. 215. Swallow-wort with smooth Spear-shaped Leaves, having Foot Stalks, a single Stalk, and upright single Umbels. Dogbane with a fibrous Root, and scarlet Petals with Saffron coloured Horns, called Bastard *Ipocacuana*.

18. *ASCLEPIAS foliis amplexicaulis oblongo-ovalibus.* Flor. Zeyl. 112. Swallow-wort with oblong oval Leaves, embracing the Stalks. Greater upright broad-leaved Indian Dogbane, and the *Beid el offar*. Alp. Egypt. 85.

19. *ASCLEPIAS foliis ovato-lanceolatis glabris caule simplici umbellis erectis terminalibus.* Swallow-wort with smooth oval Spear-shaped Leaves, a single Stalk, terminated by upright Umbels. *Apocynum erectum foliis oblongis*, Houst. MSS. Upright Dogbane with oblong pointed Leaves, and white Flowers growing in an Umbel.

20. *ASCLEPIAS foliis oblongo-lanceolatis subbirsutis caule fruticoso scandente umbellis lateralibus congestis.* Swallow-wort with oblong Spear-shaped hairy Leaves, a shrubby climbing Stalk, and compact Umbels proceeding from the Side.

The 1st Sort is the common Swallow-wort of the Shops. This is called *Vincetoxicum* & *Hirundinaria*, in English Swallow-wort, or tame Poison, from its supposed Virtue, being accounted a mighty counter Poison. The Root is the only Part used, which is composed of many strong Fibres, connected at the Top, like those of Asparagus, from which arise many Stalks, in Number proportional to the Size of the Roots; these grow near two Feet high, and are very slender at the Top; the Leaves are oval, ending in a Point, and placed opposite by Pairs. The Flowers are white, growing in Umbels near the Top of the Stalk, from which are sent out smaller Umbels; the Flowers are of one Leaf, cut into five Parts, in the Center of which are placed five horned Nectariums, among which the Stamina and Styles are situated. After the Flower is past, the two Germen become two long pointed Pods, inclosing many compressed Seeds, crowned with a soft white Down. The Flowers appear in June, and the Seeds ripen in September. This Sort grows naturally in the South of France, Spain, and Italy.

The 2d Sort agrees with the 1st, in the Shape of its Roots, Leaves, and Flowers, but the Stalks extend to a greater Length, and toward their upper Part twist round any Sticks, or Plants near it; the Flowers are black, and appear in June; it seldom fails to ripen Seeds in England.

The 3d differs from both the other in the Narrowness of its Leaves, and Weakness of its Stalks; the Umbels of Flowers are single, and of a yellow Colour. This flowers in June, and perfects Seeds in England. There is a Variety with broader Leaves, which may have come from the Seeds of this.

These Plants are common in the English Gardens, and are all Natives of the same Countries. They are generally propagated by parting their Roots, especially the 1st Sort, which seldom produces Seeds in England. The best Time for this is in Autumn, when their Stalks begin to decay. They should not be planted nearer than three Feet, for the Fibres of their Roots extend to a considerable Distance. They are very hardy, so will thrive in any Situation, but love a dry Soil. Their Stalks die in Autumn, and new ones rise in the Spring.

The 4th Sort grows naturally in North America, from whence the Seeds were brought to Europe; this rises with slender upright Stalks, garnished with very narrow Leaves, growing in Whorles round the Stalks, at the Top of which grow Umbels of small, white, starchy Flowers. These appear in July, but are never succeeded by Pods in England, so are only propagated by parting the Roots in Spring, before they put out new Shoots. They should be planted in a warm Border and dry Soil, and in Winter covered with old Turf, to prevent the Frost from penetrating the Ground.

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The 5th Sort creeps greatly at the Root, and will soon spread over a large Spot of Ground; it sends up strong Stems four Feet high, having thick oval Leaves placed opposite, and hoary on their under Sides. Towards the Top of the Stalks the Umbels of Flowers come out on the Side in July; these are of a worn out purple Colour, smelling sweet, and nod downward; sometimes these are succeeded by large oval Pods, filled with flat Seeds, crowned by a long soft Down. This is propagated by its creeping Root, and grows in any Soil or Situation. It may be transplanted any Time after the Stalks decay, and before the Roots shoot in the Spring.

The 6th Sort hath a perennial Root, which sends up several upright Stalks in Spring, about two Feet high, garnished with oval Leaves growing opposite, at the Top of the Stalks the Umbels of Flowers are produced, of a bright purple Colour, making a pretty Appearance in July, but are not succeeded by Pods in England; this must be treated as the 4th Sort.

The 7th Sort grows naturally in *North America*. This hath a perennial Root, sending out single Stalks, near three Feet high, which have oval Leaves, hairy on their under Side, and placed opposite; the Flowers grow in erect Umbels at the Top, and the Nectariums declining. These are of a worn out purple Colour resembling those of the 5th; it is very hardy, and propagates fast by its creeping Roots, never producing Seeds in England. This grows in any Soil or Situation, and is transplanted when the Stalks decay.

The 8th Sort resembles the 7th, but the Leaves are rough, and the Umbels of Flowers more compact, and come out on the Side of the Stalk; these are of an herbaceous Colour; it is propagated by Roots as the former Sort, never ripening Seeds in this Country.

The 9th Sort came first from *Canada*. It hath a perennial Root, which puts out several upright Stalks about two Feet high, which have oblong smooth Leaves placed by Pairs; at the Top are produced close Umbels of purple Flowers; these appear in August, but do not produce any Seeds here, so is only propagated by parting the Roots, which do not increase very fast, so is not very common; it is hardy enough to live Abroad, if planted in a dry Soil.

The 10th Sort is a Native of *North America*, but is hardy enough to live Abroad in England, if planted in a warm Situation, and dry Soil. This hath declining hairy Stalks, a Foot and a Half long; the Leaves are narrow, hairy, and placed opposite; the Umbels grow at the Extremity of the Branches, which are compact, and the Flowers are of a bright orange Colour. It is propagated by Seeds, which should be sown in Pots, and plunged into a moderate hot Bed to bring up the Plants, which should be inured to the open Air so soon as the Weather will permit; for if they are drawn up weak, they seldom recover it. When they are of a proper Strength to remove, they should be shaken out of the Pots, and planted in a warm Border six Inches asunder, being careful to shade them from the Sun, until they have taken fresh Root, but they must have very little Water, for they are milky Plants, and rot with much Wet. During the Summer they must be kept clean from Weeds, and when their Stalks decay in Autumn, some rotten Tan should be laid over the Ground to keep out the Frost, which should

be removed in the Spring before the Plants put out new Shoots; the following Summer they will require no other Care than before, and the next Winter they must be covered as in the former. The second Spring the Roots may be transplanted where they are to remain, the Roots will then be strong enough to flower in Summer, and will last several Years, especially if they are covered with Tan to keep out the Frost, but they should not be afterward removed; for when the Roots are large, they will not bear transplanting.

The 11th Sort is a Native of the same Countries, and is much like the former, but differs in having upright Stalks, and the Leaves growing alternate. The Roots of this grow to a large Size, so will not bear transplanting. It is propagated by Seeds, which should be treated in the Manner directed for the former. These flower the latter End of July, and August; and, in warm Seasons, sometimes ripen their Seeds in England, neither of these Plants will live long in Pots, for which Reason I have recommended their being planted in the full Ground; but they should have a warm Situation.

The 12th, 13th, and 14th Sorts grow naturally at the *Cape of Good Hope*, from whence they were brought to *Holland*. I received Seeds of the 13th Sort from *Alexandria*.

These rise with upright shrubby Stems to the Height of seven or eight Feet, and divide into many Branches, those of the 12th Sort are garnished their whole Length with long, narrow, smooth Leaves, ending in a Point; from the Wings of the Leaves the Umbels of Flowers are produced, upon long Foot Stalks; the Flowers are white, and grow loosely on the Umbel; these are frequently succeeded by short, thick, swelling Pods, ending in a Point, thick set with Hairs, and filled with compressed Seeds, crowned with a soft Down. It flowers from June to October, and the Seeds ripen in Winter.

The 13th Sort differs from the 12th, in having much broader Leaves, which are of a darker green; the Umbels of Flowers are smaller, grow upon shorter Foot Stalks, and the single Flowers are larger. This flowers at the same Time with the former.

The 14th Sort doth not rise so high as either of the former, and the Branches grow at a much greater Distance; the Leaves are shorter, and covered on both Sides with short Hairs. The Flowers grow in small loose Umbels, and are white; these appear in the same Season with the former.

These three are propagated by Seeds, which may be sown in April on a Bed of light Earth in the open Air, and when the Plants are three or four Inches high, they should be each planted in a small Pot filled with light Earth, and shaded until they have taken new Root, then they may be placed with other exotic Plants in a sheltered Situation; in October they must be removed into the Green-house, and during Winter should have but little Water, for as they abound with a milky Juice, much Wet will rot them. The only Care these will require, is to shift them into larger Pots, as they advance in Growth, but Care should be taken not to put them in Pots too large, and in the Summer to place them a-broad with other Plants from the same Country.

These 3 Sorts may also be propagated by Cuttings, which if planted in July or August, in a shady Border, will

will soon take Root, and may soon after be taken up and planted in Pots, and managed as the seedling Plants. The 13th Sort has lived in the open Air in mild Winters in the Chelsea Garden, but in cold Winters they are constantly destroyed.

The 14th Sort grows with an upright shrubby Stalk to the Height of six or seven Feet, dividing toward the Top into three or four Branches, garnished their whole Length with stiff roundish Leaves, which closely embrace them. Toward the upper Part, the Flowers are produced on their Sides, growing in short compact Umbels of an herbaceous Colour, so make but little Appearance, and come out chiefly in Autumn and Winter. This grows naturally at the Cape of Good Hope, and requires the same Culture as the former Sorts. There is a Variety of this with deep green Leaves, supposed to be a different Species, but I have raised it from the same Seeds.

The 15th Sort grows naturally in the warm Parts of America; the Seeds were sent me from La Vera Cruz. This rises with single Stalks near two Feet high, garnished with smooth Spear-shaped Leaves, ending in a Point; toward the Top of the Stalk the Umbels of Flowers are produced from the Wings of the Leaves, which are white, and stand erect; these are succeeded by oblong pointed Pods, filled with compressed Seeds, crowned with soft Down. It flowers in June and July, and the Seeds ripen in October.

This Plant is tender so must be raised in a hot Bed, and transplanted into Pots filled with rich Earth, and plunged into the Tan Bed in the Stove. It must have but little Water, and constantly remain in the Stove, otherwise the Plants will not thrive here.

The 16th Sort is also a Native of the warm Parts of America, the Roots of which have been sent to England for *Ipecacuana*, from which it may be easily distinguished by its Form; this being composed of a great Number of small Fibres, whereas the true *Ipecacuana* hath jointed Roots, which run deep into the Ground, and are fleshy. There have been many Accounts of the bad Effects of the Use of these Roots, as also of the poisonous Quality of the Plant, so that the Publick should be cautioned not to make use of it, and also to be careful not to let the milky Juice of the Plant mix it with any Thing which is taken inwardly.

This Plant rises five or six Feet high, with upright Stems, which are garnished with smooth oblong Leaves, placed opposite; toward the Top of the Branches, the Umbels of Flowers come out, which are single, and grow erect; the Petals of the Flowers are of a scarlet Colour; and the horny Nectariums in the Middle, of a bright Saffron Colour, which make a pretty Appearance; there is commonly a Succession of Flowers on the same Plant, from June to October; they are succeeded by long taper Pods filled with Seeds crowned by a soft Down, which ripen late in Autumn.

It is propagated by Seeds, which must be sown on a hot Bed in Spring; and the Plants treated in the same Manner as before directed for the former Sort; the Roots of this Sort may be continued three or four Years, but after the second Year, the Plants grow naked, and do not produce so many Flowers, as before; so it is much better to raise young Plants to succeed them, especially as they produce Plenty of Seeds in England.

The 17th Sort rises with upright Stems, six or seven Feet high, garnished with thick oval Leaves placed opposite. The Umbels of Flowers are produced from the Wings of the Leaves, which are single; the Flowers are white, of a Star figure, having five Points; the Pods of this Sort are very large, in Shape like an Ox's Testicles, and filled with flat Seeds lying over each other, like Tiles on a House. I received the Seeds from India.

This Plant is tender, so must be preserved constantly in the Stove, and treated as the two former Sorts; it should have very little Wet, especially in the Winter.

The 18th Sort approaches near to the 15th, differing only in the Leaves being broader, and the Umbels of Flowers terminating the Stalks, whereas those of the 15th are produced at the Wings of the Leaves. The Seeds were sent me from La Vera Cruz. This is tender, so must be managed as the 15th Sort. It flowers in August, and the Seeds ripen in October.

The 19th Sort I received from Carthage; this hath climbing Stalks, which fasten themselves to the neighbouring Plants; and rise to the Height of ten or twelve Feet; the Joints of the Stalks are pretty distant from each other; at each are produced two oblong, Spear-shaped, hairy Leaves, growing opposite upon very short Foot Stalks; the Umbels of Flowers, come out from the Wings of the Leaves, which are very compact, and the Flowers are of a Sulphur Colour. These appear in August, but have not been succeeded by Seeds in England.

This Plant is tender, so must be constantly preserved in the Stove, and treated as the former Sorts.

ASCYRUM. L. G. P. *Hypericoides*. St. Peterwort. The Characters are,

The Emplacement of the Flower is four leaved, the two outer being narrow and opposite; the two inner broad, Heart-shaped, and erect. The Flower hath four oval Petals, the two outer are large and placed opposite, the two inner small. In the Center is situated an oblong Germen, with a very short Style crowned by a single Stigma. This is attended by a great Number of bristly Stamina, joined at their Base in four Parts, and crowned with round Summits. The Germen becomes an oblong pointed Seed Vessel, opening in two Valves, and filled with small round Seeds. The Seed Vessel is inclosed by the two large Leaves of the Emplacement.

The Species are,

1. ASCYRUM *foliis ovatis caule tereti panicula dichotoma*. L. Sp. Pl. St. Peterwort with oval Leaves, a taper Stalk, and Flowers growing in loose Spikes from the Divisions of the Branches. *Hypericoides ex terra Mariana*. Pluk. Mant. 104. Bastard St. Johnswort of Maryland, with small yellow Flowers called St. Andrew's Cross.

2. ASCYRUM *foliis bifutis caule stricto* L. S. P. St. Peterwort with hairy Leaves and a stiff slender Stalk. Shrubby hairy St. Johnswort of Virginia.

3. ASCYRUM *foliis ovatis caule compresso* L. S. P. St. Peterwort with oval Leaves, and a flattened Stalk. Upright shrubby Bastard St. Johnswort with a yellow Flower.

4. ASCYRUM *foliis ovatis minoribus, caule procumbente*. St. Peterwort with small oval Leaves and a trailing Stalk. *Hypericoides frutescens*. Shrubby Bastard St. Johnswort, with a yellow Flower and trailing Branches.

The 1st Sort is a low Plant, whose Stalks seldom rise more than six Inches high; these have small oval Leaves, placed by Pairs; the Stalks are slender, and divide

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divide into two toward the Top. From between the Division of the Branches, the loose Spikes of Flowers are produced, which are yellow, but very small, so make no Appearance; and the Plant is scarce worthy of a Place in Gardens, but for Variety. The Root is perennial, and the Plant may be propagated by laying down its Branches; it loves a moist Soil, and a shady Situation. This grows naturally in *North America*.

The 2d Sort grows about three Feet high, with upright Stalks, garnished with hairy oblong Leaves; the Flowers are produced at the Ends of the Stalks, of the Shape and Colour with common St. Johnswort, but have only four Leaves. This hath a perennial Root, but the Stalks decay every Autumn. It may be propagated by parting the Roots in Autumn, when the Stalks decay, and should be planted in a loamy Soil; it grows naturally in *Virginia* and some Years produces Seeds in *England*.

The 3d Sort grows naturally in *South Carolina*, from whence I received the Seeds. This Plant rises a Foot and a Half high, with flat Stalks, garnished with oval smooth Leaves growing opposite; the Stalks are terminated by three or four yellow Flowers, growing close together, larger than those of the common St. Johnswort, and the Petals of the Flowers are hollow. This Sort rarely produces Seeds in *England*, but it may be propagated by Cuttings, made of the young Shoots in *May*; which, if planted in Pots, and plunged into a very moderate hot Bed, will take Root in five or six Weeks, when they may be transplanted into a warm Border, where they will endure the Cold of our ordinary Winters; but in severe Frosts they are frequently destroyed, unless the Roots are covered with Tan to keep out the Frost.

The 4th Sort hath many slender Branches which trail upon the Ground, these are garnished with small oval Leaves, very little larger than those of the Mother of Thyme; the Flowers are produced at the Ends of the Branches, in small Clusters, which are yellow, and composed of four small Petals. This flowers in *August*, but never produces Seeds in *England*. It grows naturally in *South Carolina*, and in the *American Islands*.

These Plants have little Beauty, so are seldom cultivated but in Botanical Gardens, for the Sake of Variety.

ASCYRUM BALEARICUM.

ASCYRUM MAGNO FLORE. } See Hypericum.

ASCYRUM VULGARE.

ASH TREE. See Fraxinus.

ASHES are esteemed by some a good superficial Dressing for Corn and Meadow Land, as they give a new Ferment to such Lands as are in any Degree sluggish and unactive, and enrich those which are jejune and slow, being endowed with singular Qualities to make them prolific.

All Sorts of Ashes contain in them a very rich fertile Salt, and are the best Manure of any to lay upon cold wet Land; but then they ought to be kept dry, that the Rain may not wash away their Salt. Experience has shewn, that the Ashes of any Sort of Vegetable are very advantageous to Land, by the Improvement that has been made in most Places in *England*, by burning Bean Stalks, Fern, Furze, Heath, Sedge, Straw, Stubble, &c.

Coal Ashes, or such as are made of *Newcastle, Scotch*, and other Pit Coal, are much recommended by some; but the first are most approved of, because they contain a greater Quantity of nitrous and sulphureous Matter

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than the others, though the rest are good.

There is no Dressing so good for Grass Ground as Sea Coal Ashes, especially for cold wet Land; and where it is subject to Rushes or Moss; for these will destroy both, and occasion the Grass to be much finer: This Dressing should be laid on the Land early in Winter, otherwise it will do Harm the first Summer; for when they are laid on the Ground in the Spring, they will cause the Grass to burn as soon as the Warmth comes on; whereas those that were put on early enough to receive the Winter's Rain, will be washed into the Ground, before the warm Season, whereby the Grass will have the Benefit of it the first Year. Where the Land is poor and sour, producing Rushes and Moss only, there should be at least twenty Loads of Ashes laid upon each Acre; for a slight Dressing will not answer the Design of killing Weeds and Moss, nor will it be sufficient to enrich Land which is cold and sluggish, therefore it will be better to lay a good Dressing at first, than to do it at several Intervals; for one substantial Dressing will continue the Land longer in Heart than three slight ones, beside the Advantage before mentioned.

But these ought to be applied superficially, and not too near the Roots of Plants; and if so, there are few Plants but will receive Benefit by them, by their nitrous and sulphureous Qualities being washed down by the Rain, which will open by the Strength of Water, and cause it to heave, in some Degree, as Lime will do when Water is thrown upon it.

Wood Ashes are commended as the principal of superficial Dressings for Land, in that they contain a vegetative Kind of Salt.

Kiln Ashes, *i. e.* such as are made of Straw, Furze, &c. are, by some, accounted as good as any of the spirituous Improvements of light Lands; but for such as are heavy, they are looked upon as scarce solid and ponderous enough. These Ashes the Malsters, in the West Country, sift over their Corn and Grass; which are supposed, by their Heat, to cause a Fermentation, a Howness and Looseness in the Mould; by which Means, the Rains enter it more easily, and dispose the Earth to Fruitfulness.

But these being light, ought never to be strewed nor sifted in windy Weather, because they would be blown away; and if it could be so ordered as to be done just before Snow or Rain, it would be the better.

Soap Ashes (after the Soap Boilers have done with them) are very proper for very cold and sour Lands, and kill Weeds of all Sorts: Sir *Hugh Plat* mentions one at *Ware*, who having a Piece of Land over-run with Broom and Furze, manured it with Soap Ashes, and had an incredible Crop of Wheat for six Years successively.

Pot Ashes, after the Pot Ash Men have done with them, are esteemed good for most Sorts of Land; but as most of the Salt has been drawn off by the Lee, they ought to be laid on much thicker than other Ashes.

Turf Ashes are very good for all, but especially Clay Lands; they will be much better if mixed with Lime.

All these Ashes ought to be kept dry, from the Time they are made till they are used, else the Rains will both wash away their Goodness, and also make them clod, especially some of the last mentioned, which will prevent their spreading.

And besides, one Load of Ashes that has been kept

dry, will go as far as two that have been exposed to the Rain: And Coal Ashes, if moistened with Chamber-lyc or Soap-suds, will greatly add to their Strength.

All calcined Vegetables cause a fiery Heat and Vegetation, and, when Wet comes, set the Ground to work; by a subtle Insinuation unlocking the Clods, and quickening the Sluggishness of the Earth; according to that established Maxim among Naturalists, *That all Fermentation is caused by the Interposition or Mixture of different Qualities one from the other.*

It is after this Manner that Coal Ashes operate so admirably in loosening and mouldering stiff clayey Grounds, and, as it is usually termed, making it rough, ashy, or sandy-like: And after the same Manner, Sand mixed with Clay does well, especially when it is impregnated with saline Qualities.

ASPALATHUS. *Lin. Gen. P. 767. African Broom.*

The Characters are,

The Flower hath an Em'lement of one Leaf, which is cut into five equal Segments at the Top; the Flower is of the Butterfly Kind. The Standard is hairy, compressed, and blunt pointed; the Wings are blunt, Moon-shaped, and spread open, being shorter than the Standard; the Keel is bifid, and of the same Length as the Wings. It hath ten Stamina, nine of which are joined and covered by the Standard, the other standing separate; these are crowned by single oblong Summits. In the Bottom is situated an oval Germen supporting a single Style, crowned by a pointed Stigma. The Germen afterward becomes an oval oblong Pod, inclosing one or two Kidney-shaped Seeds.

The Species are,

1. **ASPALATHUS foliis confertis subulatis mucronatis bispidis floribus capitatis.** *Lin. Sp. Plant. 711. Aspalathus* with rough pointed Awl-shaped Leaves growing in Clusters, and Flowers in Heads. *Genista Africana.* Yellow African Broom, with hairy Flowers collected in woolly Heads, and prickly Asparagus Leaves which are hairy.

2. **ASPALATHUS foliis quinatis sessilibus.** *Lin. Sp. Plant. 712.* Five leaved *Aspalathus* growing close to the Branches. *Dorycnium Indicum.* Indian shrubby Trefoil, with single red Flowers, an oblong Foot Stalk, and a small Pod.

3. **ASPALATHUS foliis trinis linearibus sericeis stipulis simplicibus mucronatis floribus sparsis tomentosis.** *Lin. Sp. Plant. 713.* *Aspalathus* with three narrow silky Leaves, single pointed Husks, and woolly Flowers growing thinly. Narrow leaved African silvery *Cytisus*, with a silky Down and Flowers in a Spike like a Hare's Foot.

These Plants grow naturally about the Cape of Good Hope, from whence I received their Seeds. The 1st is a low Shrub growing about three Feet high, with slender Branches, garnished with many trifoliate Leaves growing in Clusters, which are Awl-shaped, pointed, and rough; at the Ends of the Branches the Flowers come out, which are yellow, collected in woolly Heads; these are rarely succeeded by Pods in England. It is propagated by Seeds, which must be obtained from the Cape, and should be sown in Pots filled with light Earth as soon as they arrive: If this happens in Autumn, the Pots should be plunged into an old Tan Bed whose Heat is spent, where they may remain till Spring, when they should be removed into a moderate hot Bed, which will bring up the Plants. But when the Seeds arrive in Spring, the Pots in which the Seeds are sown should be then plunged

into a moderate hot Bed; and in warm Weather the Glasses must be shaded in the Middle of the Day, and the Pots frequently refreshed with Water. Those Seeds which are sown in Spring, seldom grow the same Year; therefore in the Autumn, the Pots should be put into an old Tan Bed, as was directed for those sown in Autumn, and afterward put on a hot Bed the following Spring. When the Plants come up, and are strong enough to remove, they should be each planted into a separate small Pot filled with light Earth, and plunged into a moderate hot Bed, to encourage their Rooting again; and when established in the Pots, they should by Degrees be inured to the open Air, into which they should be removed in Summer, placing them in a sheltered Situation, where they may remain till Autumn, when they must be carried into the Green-house, and in Winter should have but little Water.

The 2d Sort grows about 5 Feet high, with slender Branches, garnished with Leaves growing by fives close to the Branches; the Flowers come out singly upon long Foot Stalks, of a pale red Colour; these appear in August, but seldom are succeeded by Pods here. This is propagated and treated as the former.

The 3d Sort rises about four Feet high, with a shrubby Stalk dividing into slender Branches, which are garnished with silky white Leaves, coming out by threes; the Flowers are yellow, downy, and grow thinly on the Branches. This is propagated by Seeds, and must be treated as the first Sort. It flowers late in Summer.

ASPARAGUS, corruptly called Sparrowgrafs.

The Characters are,

The Flower is naked, having no Empalement, and is of the Bell-shaped Kind, composed of six Leaves, with an erect Tube, but are spread open and reflexed at the Top. These are male and hermaphrodite, sometimes in different Plants, and at other Times on the same Stalks. The hermaphrodite Flowers have in their Center a roundish three cornered Germen, with a short Style crowned by a prominent Stigma; this is attended by six slender Stamina, crowned by round Summits, which are not so long as the Petals of the Flower. The Germen becomes a round Berry having three Cells, in each of them is lodged one or two Seeds, smooth outward, but angular on their Inside. The male Flowers have six Stamina, but no Germen or Style, nor are succeeded by any Berries.

The Species are,

1. **ASPARAGUS caule herbaceo erecto, foliis setaceis, stipulis paribus.** *Flor. Suec. 272.* Asparagus with an upright herbaceous Stalk, bristly Leaves, and equal Stipula. *Asparagus Sativa.* C. B. P. Garden Asparagus.

2. **ASPARAGUS caule inermi herbaceo foliis teretibus longioribus fasciculatis.** Asparagus with a smooth herbaceous Stalk, and longer taper Leaves growing in Clusters. Maritime Asparagus with a thicker Leaf.

3. **ASPARAGUS foliis aciformibus pungentibus caule fruticoso inermi.** *Sauv. Monsp. 45.* Asparagus with prickly Leaves and a shrubby smooth Stalk.

4. **ASPARAGUS aculeis solitariis ramis flexuosis foliis brevioribus fasciculatis.** Asparagus with single Spines, flexible Branches, and shorter Leaves growing in Clusters.

5. **ASPARAGUS aculeis solitariis ramis reflexis retrofractisque, foliis fasciculatis.** *Lin. Sp. Plant. 313.* Asparagus with single Spines, reflexed Branches, and Leaves growing in Clusters. Narrow leaved African Asparagus.

6. **ASPARAGUS**

6. *ASPARAGUS aphyllus spinis fasciculatis inæqualibus divergentibus.* Hort. Cliff. 122. Asparagus without Leaves, and unequal Spines growing in Clusters, which spread from each other.

7. *ASPARAGUS caule inermi ramis declinatis foliis setaceis.* Prod. Leyd. 29. Asparagus with a smooth Stalk, declining Branches, and bristly Leaves.

8. *ASPARAGUS aculeis solitariis caule erecto foliis fasciculatis, ramis filiformibus.* Lin. Sp. Plant. 313. Asparagus with single Spines, an upright Stalk, Leaves growing in Clusters, and very slender Branches.

9. *ASPARAGUS spinis lateralibus terminalibusque, ramis aggregatis foliis fasciculatis.* Lin. Sp. Plant. 314. Asparagus with Spines growing on the Sides and Ends of the Branches, which are in Bunches, and Leaves coming out in Clusters.

10. *ASPARAGUS foliis solitariis lineari lanceolatis caule flexuoso aculeis recurvis.* Flor. Zeyl. 124. Asparagus with single narrow Spear-shaped Leaves, a flexible Stalk, and recurved Spines. Great prickly Asparagus of Ceylon, with bushy Stalks.

The 1st Sort is the common Asparagus, which is cultivated for the Use of the Table, and may have probably been brought by Culture to the Perfection it now is, from the wild Sort, which grows naturally in the Fens of *Lincolnsire*, where the Shoots are no larger than Straws; but if so, it must have been from very long Culture and good Management; for a Friend of mine, who procured some Seeds of the wild Sort, which he cultivated with great Care, in very rich Ground, yet could not bring the Roots to produce Shoots more than half the Size of the Garden Kind, which grew on the same Ground; but he always found the wild Sort came up a Week or ten Days earlier in the Spring, and the Shoots were exceeding sweet.

The Asparagus is propagated by Seeds, which should be procured from a Person of Skill, who may be depended upon for Integrity in supplying with his best Seeds. But where a Person is in Possession of some good Beds of Asparagus, it is much the best Way to save it himself; in order to which, a sufficient Number of the fairest Buds should be marked early in the Spring, and permitted to run up for Seeds; because those which run up after the Season for cutting the Asparagus is over, are generally so backward, as not to ripen the Seeds unless the Summer is warm, and the Autumn very favourable. In the Choice of the Buds to be left for Seeds, great Regard must be had to their Size and Roundness, never leaving any that are inclinable to be flat, or that soon grow open headed, always choosing the roundest, and such as have the closest Tops. But as several of these produce only male Flowers which are barren, so a greater Number of Buds should be left, than might be necessary, if there could be a Certainty of their being all fruitful, but this never happens. When the Buds are left, it will be proper to thrust a Stake down by each, being careful in doing this, not to injure the Crown of the Root. These Stakes will not only serve as Marks to distinguish them from the others when they are all run up, but also to fasten the Shoots to, when they are advanced in Height, and put out lateral Branches, to prevent their being broken by Wind; which frequently happens where this is not observed, before the other Shoots are permitted to run up, after which there is little

Danger of it, because they will then be screened by the other Stalks. Toward the End of *September* the Berries will be fully ripe, when the Stalks should be cut off, and the Berries stripped into a Tub, in which they may remain three Weeks or a Month to sweat, which will rot the outer Husks; then fill the Tub with Water, and with your Hands break all the Husks by squeezing them between your Hands. These Husks will all swim upon the Water, but the Seeds will sink to the Bottom; so that by pouring off the Water gently, the Husks will be carried along with it; and by putting fresh Water two or three Times, and stirring your Seed about, you will make it entirely clean: Then spread the Seed upon a Mat or Cloth, and expose it to the Sun and Air in dry Weather, until it is perfectly dry; when you may put it into a Bag, and hang it up in a dry Place till the Beginning of *February*; at which Time you must prepare a Bed of good rich Earth made very level, whereon you must sow your Seeds (but not too thick, which will cause your Plants to be small); then tread the Bed all over to bury the Seed in the Ground, and rake it over smooth.

The following Summer, keep it diligently cleared from Weeds, which will greatly add to the Strength of your Plants; and toward the End of *October*, when the Haulm is quite withered, spread a little rotten Dung over the Surface of the Ground, about an Inch thick, to preserve the young Buds from being hurt with Frosts, &c.

The Spring following, your Plants will be fit to put out for good (for I would never choose Plants of more than one Year's Growth, having very often experienced them to take much better than older, and to produce finer Roots): You must therefore prepare your Ground by trenching it well, burying a good Quantity of rotten Dung at the Bottom of each Trench, that it may lie at least six Inches below the Surface of the Ground; then level your whole Plot very exactly, taking out all large Stones: But this should not be done long before you intend to plant your Asparagus, in which you must be governed according to the Nature of your Soil or the Season; for if your Soil is dry and the Season forward, you may plant early in *March*; but in a very wet Soil, it is better to wait till the End of that Month, or the Beginning of *April*, which is about the Season that the Plants are beginning to shoot. I know many People have advised planting Asparagus at *Michaelmas*, but this I have experienced to be very wrong; for in two different Years I was obliged to transplant large Quantities at that Season, but I had better have thrown away the Plants, for upon Examination in the Spring, I found most of the Roots were grown mouldy, and decaying; and I am sure, not one in five succeeded, and those which did were so weak, as not to be worth their standing.

The Season being now come, you must with a narrow pronged Dung Fork, carefully fork up your Roots, shaking them out of the Earth, and separating them from each other; observing to lay their Heads even, for the more convenient planting them, which must be performed in this Manner:

Your Plot of Ground being leveled, you must begin at one Side thereof, ranging a Line very tight cross the Piece; by which you must throw out a Trench exactly straight, and about six Inches deep, so as not to turn up the Dung, into which you must lay your Roots, spreading

them with your Fingers, and placing them upright against the Back of the Trench, that the Buds may stand forward, and be about two Inches below the Surface of the Ground, and at twelve Inches Distance from each other; then, with a Rake, draw the Earth into the Trench again, laying it very level, which will preserve the Roots in their right Position; then remove your Line a Foot farther back, and make another Trench in like Manner, laying therein your Plants as before directed, and continuing the same Distance Row from Row; only observing between every four Rows, to leave a Distance of two Feet four Inches for an Alley to go between the Beds to cut the Asparagus, &c.

Your Plot of Ground being finished and levelled, you may sow thereon a small Crop of Onions, which will not hurt your Asparagus, and tread in your Seeds, raking your Ground level.

There are some Persons who plant the Seeds of Asparagus in the Place where the Roots are to remain, which is a very good Method, if it is performed with Care. The Way is this: After the Ground has been well trenched and dunged, they lay it level, and draw a Line cross the Ground (in the same Manner as is practised for planting the young Plants); then with a Dibble make Holes at a Foot Distance, into each of which you must drop two Seeds, for Fear one should miscarry; these Holes should not be more than half an Inch deep; then cover the Seeds, by striking the Earth in upon it, and go on removing the Line a Foot back for another Row; and after four Rows are finished, leave a Space for an Alley between the Beds, if it is designed to stand for the natural Season of cutting; but if it is to be taken up for hot Beds, there may be six Rows planted in each Bed, and the Distance in the Rows need not be more than nine Inches. This should be performed by the Middle of February, because the Seeds lie long in the Ground; but if Onions are intended to be sown upon the Ground, that may be performed a Fortnight or three Weeks after, provided the Ground is not stirred so deep as to disturb the Asparagus Seeds, in raking the Onion Seed into the Ground.

As the Roots of Asparagus always send forth many long Fibres which run deep into the Ground, so when the Seeds are sown where they are to remain, these Roots will not be broken or injured, as those must be which are transplanted; therefore they will shoot deeper into the Ground, and make much greater Progress, and the Fibres will push out on every Side, and cause the Crown of the Root to be in the Center; whereas in transplanting, the Roots are made flat against the Side of the Trench.

When your Asparagus is come up, and the Onions have raised their Seed Leaves upright (which will be in a Month or six Weeks after planting), you must with a small Hoe cut up all the Weeds, and thin your Crop of Onions where they may have come up in Bunches: But this must be done carefully, and in dry Weather, that the Weeds may die as fast as they are cut, being careful not to injure the young Shoots of Asparagus, also to cut up the Onions which grow near the Shoots. This Work must be repeated about three Times, which, if well done, and the Season not too wet, will keep the Ground clear from Weeds until the Onions are fit to be pulled up, which is commonly August, and is known when their

Greens fall down and begin to wither. When you have drawn off your Onions, you must clean your Ground well from Weeds, which will keep it clean till you earth the Beds; this must be done in October, when the Haulm begins to decay; for if you cut the Haulm while green, the Roots will shoot fresh again, which will greatly weaken them. This young Haulm should be cut off with a Knife, leaving the Stems two or three Inches above Ground, which will be a Guide to distinguish the Beds from the Alleys; then with a Hoe clear off the Weeds into the Alleys, and dig up the Alleys, burying the Weeds in the Bottom, and throw the Earth upon the Beds, so that the Beds may be about five Inches above the Level of the Alleys: Then you may plant a Row of Coleworts in the Middle of the Alleys, but do not sow or plant any Thing upon the Beds, which would greatly weaken your Roots; nor would I ever advise the planting Beans in the Alleys (as is practised by many); for it greatly damages the two Outside Rows of Asparagus. In this Manner it must remain till Spring, when you must hoe the Beds to destroy all young Weeds; then rake them smooth, and observe all the succeeding Summer to keep them clear from Weeds; in October dig up the Alleys again, as before directed, earthing the Beds, &c.

The 2d Spring after planting, you may begin to cut some of your Asparagus, though it will be much better to stay until the 3d; therefore now you must fork up your Beds with a flat pronged Fork, made on Purpose, which is commonly called an Asparagus Fork: This must be done before the Buds shoot in the Spring, and with Care, lest you fork too deep, and bruise the Head of the Root; then rake the Beds over smooth, just before the Buds appear above Ground, which will destroy all young Weeds, and keep your Beds clean much longer than if left unraked, or done so soon as forked; and when your Buds appear about four or five Inches above Ground, you may then cut them, but it should be done sparingly, only taking the large Buds, and suffering the small to run up to strengthen the Roots; for the more you cut, the greater will be the Increase of Buds, but they will be smaller and the Roots sooner decay. When you cut a Bud, open the Ground with your Knife (which should be very narrow and long in the Blade, and filled with Teeth like a Saw) to see whether any more young Buds are coming up close by it, which might be either broken or bruised in cutting the other, then with your Knife saw it off about three Inches under Ground. This may appear very troublesome to People unacquainted with the practical Part, but those who are employed in cutting Asparagus, will perform a great deal of this Work in a short Time; but Care in doing this is absolutely necessary to be observed by all who cut Asparagus.

The Manner of dressing your Asparagus Beds is every Year the same as directed for the 2d, viz. keeping them from Weeds, digging the Alleys in October, and forking the Beds toward the End of March, &c. only observe every other Year to lay some rotten Dung (from a Melon or Cucumber Bed) all over your Beds, burying some in the Alleys also, at the Time for digging them up. This will preserve the Ground in Heart to maintain your Roots in Vigour, and by this Management, a Plot of good Asparagus may be continued for ten or twelve Years in cutting, and will produce good Buds, especially if it is

not cut too long each Season; for when it is not left to run up pretty early in *June*, the Roots will be greatly weakened, so the Buds will be smaller: Therefore, in those Families where Asparagus is required late in the Season, a few Beds should be set apart for that Purpose, which will be much better than to injure the whole Plantation, by cutting it too long.

I cannot help taking Notice of a common Error that has long prevailed, which is, that of not dunging the Ground for Asparagus, believing that the Dung communicates a strong rank Taste to the Asparagus; which is a great Mistake, for the sweetest Asparagus is that which grows upon the richest Ground, and poor Ground occasions that rank Taste, so often complained of; the Sweetness of Asparagus being occasioned by Quickness of its Growth; which is always proportionable to the Goodness of the Ground, and the Warmth of the Seasons: In order to prove this, I planted two Beds of Asparagus, upon Ground which had Dung laid a Foot thick; these Beds were every Year dunged extremely thick, and the Asparagus produced from these Beds was much sweeter than any I could procure, though they were boiled together in the same Water.

The Quantity of Ground necessary to be planted with Asparagus, to supply a small Family, should be at least eight Rods, less than that will not do; for if you cannot cut one hundred at a Time, it will scarcely be worth while; for you must be obliged to keep it after it is cut two or three Days, to furnish enough for one Mess; but for a larger Family, sixteen Rods should be planted, which, if a good Crop, will furnish two or three hundred each Day in the Height of the Season.

But as there are several People who delight in having early Asparagus, which is become a very great Trade in the Kitchen Gardens near *London*, I shall give proper Directions for the obtaining it any Time in Winter.

You must first be provided with a Quantity of good Roots (either of your own raising, or purchased from such Gardeners as plant for Sale), that have been two or three Years planted out from the Seed Bed; and having fixed upon the Time you would willingly have your Asparagus fit to cut, about six Weeks before, you should prepare a Quantity of new Stable Horse Dung, which should be thrown in a Heap for a Week or more, to ferment, mixing some Sea Coal Ashes with it; then it should be turned over into a Heap, where it must lie another Week, when it will be fit for Use. Then dig out a Trench in the Ground where you intend to make the Bed, the Width of the Frames that are designed to cover it, and the Length in Proportion to the Quantity you intend to have (which if designed only to supply a small Family, three or four Lights at a Time will be sufficient): Then lay down your Dung into the Trench, working it very regularly, and beat it down very tight with a Fork, laying it at least three Feet in Thickness or more, when the Beds are made in *December*; then put your Earth thereon about six Inches thick, breaking the Clods and laying it level; and at one End, begin laying your Roots against a little Ridge of Earth, raised about four Inches high: Your Roots must be laid as close as possible one to the other, in Rows, with their Buds standing upright; and between every Row lay a small Quantity of fine Mould, observing to keep the Crown of the

Roots exactly level. When you have finished laying your Bed with Roots, you must lay some stiff Earth up to the Roots, on the Outfides of the Bed, which are bare, to keep them from drying; and thrust two or three sharp pointed Sticks, about two Feet long, down between the Roots, in the Middle of the Bed, at a Distance from each other. The Use of these Sticks is to let you know what Temper of Heat your Bed is in, which you may find by drawing up the Sticks, and feeling the lower Part; and if, after the Bed has been made a Week, you find it doth not heat, you may lay a little Straw or Litter round the Sides, or upon the Top, which will greatly help it; and if you find it very hot, so as to endanger scorching the Roots, it will be advisable to let it remain wholly uncovered, and to thrust a large Stick into the Dung, on each Side of the Bed, in two or three Places, to make Holes for the great Steam of the Bed to pass off, which in a short Time will reduce the Bed to a moderate Heat.

After your Bed has been made a Fortnight, you must cover the Crowns of the Roots with fine Earth, about two Inches thick; and when the Buds appear above Ground through that Earth; you must again lay on a fresh Parcel, about three Inches thick; so that in the whole, it may be five Inches above the Crowns of the Roots, which will be sufficient.

Then make a Band of Straw (or long Litter), about four Inches thick, which you must fasten round the Sides of the Bed, that the upper Part may be level with the Surface of the Ground: This must be fastened with strait Sticks about two Feet long, sharpened at the Points, to run into the Bed; and upon this Band you must set your Frames, and put your Glasses thereon; but if, after your Bed hath been made three Weeks, you find the Heat decline, you must lay a good Lining of fresh hot Dung round the Sides of the Bed, which will renew the Heat; and in bad Weather, as also every Night, keep the Glasses covered with Mats and Straw; but in the Day Time, let it be all taken off, especially whenever the Sun appears; which, shining through the Glasses, will give a good Colour to the Asparagus.

A Bed thus made, if it works kindly, will begin to produce Buds, for cutting, in about five Weeks, and will hold about three Weeks in cutting; which, if rightly planted with good Roots, will produce, in that Time, about three hundred Buds in each Light; so that, if you would continue your Asparagus until the Season of the Natural being produced, you must make a fresh Bed every three Weeks, until the Beginning of *March*, from the Time your first Bed was made; for if your last Bed is made about a Week in *March*, it will last till the Season of natural Asparagus; and the last Beds will come a Fortnight sooner to cut than those made about *Christmas*; and the Buds will be larger, and better coloured, as they will then enjoy more of the Sun.

If you intend to follow this Method of forcing early Asparagus, you must plant every Year a Quantity, which you shall judge necessary (unless you intend to buy the Roots from some other Garden); the Quantity of Roots necessary to plant one Light, is commonly known by the Measure of the Ground where they grow; for in a good Crop, where few Roots are missing, one Rod of Ground will furnish enough for a Light; but this Calculation

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lation is made from the Ground planted with Roots, which are designed to be taken up after two or three Years Growth for forcing, in which, there are six Rows in a Bed, at but ten Inches Distance, and the Plants 8 or 9 Inches asunder in the Rows, but where there is a greater Space between the Rows, and fewer Rows in a Bed, then there must be a greater Quantity of Ground allotted for each Light. Most of the Kitchen Gardeners about *London*, take up their Asparagus Roots after two Years Growth, from planting; but where the Land is not very good, it will be better to let it have three Years Growth, for if the Roots are weak, the Buds of Asparagus will be very small, so not worth the Trouble of forcing. The best Ground for planting Asparagus, to have large Roots for hot Beds, is a low moist rich Soil; but for those that are to remain for a natural Produce, a fresh sandy Loam, when well dunged, is preferable to any other.

The 2d Sort is mentioned to grow naturally in *Wales*, and also near *Bristol*, but this I have great Doubts about; for those who have mentioned it, say it does not differ from the Garden Kind, which is only altered by Culture. But I have lately received Specimens of this, which were gathered near *Montpelier*, by which I am convinced that it is a different Species from that which grows in *Wales*, for the Leaves of the wild maritime Kind, are taper and thick, and are thinly placed on their Branches, nor do the Stalks branch out so much. Upon comparing these Specimens with one which I had dried some Years ago, which grew in the Garden at *Chelsea*, from Seeds which were sent me from *Gibraltar*, I found them to be the same; but those Plants were too tender to live abroad in this Country, for they were killed by a severe Frost the second Winter after they came up, though the Surface of the Ground was covered with Dung; and Mr. *Magnol* of *Montpelier*, was of Opinion that it was a different Species, for he says, the common wild Asparagus and this grew near each other in the Neighbourhood of *Montpelier*, and the young Shoots of the former were sweet, whereas those of the latter were bitter. The same has been confirmed to me by several Gentlemen, who have resided many Years at *Gibraltar* and *Minorca*, where the 2d Sort grows naturally in Plenty.

This Sort is propagated by Seeds in the same Manner as the Garden Kind, but must have a warmer Situation, and the Roots should be well covered in Winter, to prevent the Frost from penetrating the Ground.

The 3d Sort hath white crooked shrubby Stalks, which rise 4 or 5 Feet high, but have no Spines on them; the Leaves come out in Clusters from the same Point, like those of the Larch Tree; these are very short, and end in sharp Prickles, so that they are troublesome to handle. This Sort grows naturally in the South of *France*, *Spain*, and *Portugal*. It is propagated by Seeds as the former Sorts, but is too tender to live abroad in *England*, so the Roots should be planted in Pots, and sheltered in Winter.

The 4th Sort grows with shrubby Stalks, 3 or 4 Feet high, with very white Bark, and are armed with Thorns which are single, coming out just below each Tuft of Leaves. These Stalks continue several Years, and put out many Branches, which are garnished with narrow short Leaves. These continue green all the Winter, if the Plants are screened from severe Frost.

It is propagated by Seeds as the former, which may be procured from the *Mediterranean*, where it grows naturally; some of the Plants should be kept in Pots, that they may be sheltered in Winter, and the others may be planted in the full Ground in a warm Situation, and in hard Frosts covered, otherwise it will not live abroad in this Country.

The 5th Sort grows naturally at the *Cape of Good Hope*. This hath very crooked irregular Stalks, which rise 8 or 10 Feet high, and are shrubby, putting out several Side Branches, which are weak. These are garnished with long narrow Leaves coming out in Clusters like those of the Larch Tree; under each of these Clusters is placed a single sharp Thorn. The Stalks continue several Years, and the Leaves keep green all the Year. This Sort is commonly propagated by parting the Roots, because the Plants rarely produce Seeds in this Country, the best Time for this is in *April*. The Roots must be planted in Pots, and removed into the Green-house in Autumn.

The 6th Sort grows naturally in *Spain*, *Portugal*, and *Sicily*, in rocky Places. This sends up many weak irregular Shoots, which have no Leaves, but instead thereof, are armed with short stiff Thorns, which come out 4 or 5 together from the same Point, and spread from each other every Way. The Flowers are small, of an herbaceous Colour; the Berries are larger than those of the common Sort, and are black when ripe. This is tender, so must be treated as the 3d Sort.

The 7th Sort grows naturally at the *Cape of Good Hope*. I received it from Dr. *Van Royen*, Professor of Botany at *Leyden*. This sends up from the Root several slender Stalks, which put out weak Branches, declining downward; these are closely garnished with bristly Leaves, like those of Garden Asparagus, which continue green through the Year. It hath not produced Seeds in *England*, so is only propagated by parting the Roots, as the fifth Sort, and treated in the same Manner.

The 8th Sort grows naturally at the *Cape of Good Hope*; this sends up many weak Shoots growing in Clusters, which are armed with sharp Spines, both on the Side and Ends of the Shoots; the Leaves come out in small Clusters, which continue green all the Year. This doth not produce Seeds in *England*, so is propagated as the 5th Sort, and requires the same Treatment.

The 10th Sort sends out from the Root many weak climbing Branches which rise five or six Feet high, and are garnished with narrow Spear-shaped Leaves coming out single; the Shoots are armed with short crooked Spines, which are so closely set on, that it is difficult to handle the Branches. This is propagated by parting the Root; but the Plants must be placed in a moderate Stove, otherwise they will not thrive in this Country. It grows naturally in the Island of *Ceylon*.

These Plants are preserved in the Gardens of the Curious, where they add to the Variety; being not difficult to manage, where there is Conveniency to house them in Winter, among other exotic Plants.

ASPARAGUS SCANDENS. See *Medeola*.

ASPEN-TREE. See *Populus*.

ASPERUGO, Small Wild Bugloss.

The Characters are,

The Empalement of the Flower is of one Leaf, cut slightly at the Top into five equal Parts; the Flower is of one Leaf,

Leaf, with a short cylindrical Tube, but is cut at the Top into five small blunt Parts, which are closed at their Base: It hath five short Stamina, crowned by oblong Summits; in the Center there are four compressed Germen, supporting a short slender Style, crowned by a blunt Stigma. The Germen afterward become four oblong Seeds, enclosed in the Empalement.

We know but one Species of this Genus, which is, *ASPERUGO Flor. Lapp. 76.* Small Wild Bugloss, Great Goose Grass, or German Madwort.

This is an annual Plant, which is found wild in some Parts of England, as near Newmarket, at Boxley in Suffolk, and in Holy Island. It is preserved in the Botanick Gardens for Variety: It may be easily propagated by Seeds, which should be sown in Autumn; for if the Seeds are kept out of the Ground till Spring, they do not succeed so well. When the Plants come up, they require no other Culture but to keep them clear from Weeds; they flower in May, and ripen their Seeds in June, which, if suffered to scatter, will rise in Autumn; so that when this Plant is once brought into a Garden, it will maintain itself, provided it be allowed a Place.

ASPERULA, Woodroof.

This Plant grows wild in shady Woods in many Parts of England, and flowers in April or May, and is sometimes used in Medicine.

ASPHODELUS. King's Spear.

The Characters are,

The Flower has no Empalement; it is of one Leaf, cut into six Parts, which spread open; at the Bottom is inserted a globular Nectarium, having six Valves; it hath six Awl-shaped Stamina, which are inserted in the Valves of the Nectarium, and are crowned by oblong Summits, which are prostrate, and turn upward; between the Nectarium is placed a globular Germen, supporting an Awl-shaped Style, crowned by a Club-like Stigma: The Empalement afterward becomes a fleshy globular Seed Vessel, having three Cells, which are filled with triangular Seeds.

The Species are,

1. *ASPHODELUS caule folioso, foliis triquetris fistulosis.* King's Spear with a leafy Stalk, and triangular fistular Leaves. King's Spear with a yellow Root and Flower.

2. *ASPHODELUS caule nudo ramoso foliis ensiformibus laevibus.* King's Spear with a naked branching Stalk, and smooth Sword shaped Leaves. *Asphodelus albus.* Male branching King's Spear with white Flowers.

3. *ASPHODELUS caule nudo simplici foliis lineari-ensiformibus.* King's Spear with a single naked Stalk, and narrow Sword-shaped Leaves. *Asphodelus albus non ramosus.* C. B. P. 28. White unbranched King's Spear.

4. *ASPHODELUS foliis ensiformibus carinatis scapo ramoso-patulo.* King's Spear with Sword-like, Keel-shaped Leaves, and a branching spreading Stalk. Another smaller branching King's Spear with white Flowers.

5. *ASPHODELUS caule nudo foliis subulatis fistulosis radice annua.* King's Spear with a naked Stalk, fistular Awl-shaped Leaves, and an annual Root. Annual branching Spiderwort with a small Flower and fistular Leaves.

6. *ASPHODELUS foliis planis, caule ramoso, floribus sparsis.* King's Spear with plain Leaves, a branching Stalk, and Flowers placed thinly.

The 1st Sort is the yellow *Asphodel*, which is directed for Use in Medicine; this hath Roots composed of many thick fleshy Fibres, yellow and joined into a Head at

the Top; from whence arise strong round single Stalks, near three Feet high, which are garnished their whole Length with long triangular hollow Leaves, of a Sea-green Colour; the upper Part of the Stalk is adorned half way with yellow Star-shaped Flowers, which begin toward the Bottom, and are followed by others above; so that on the same Spike, there is often a Succession of Flowers for a Month. It flowers in June, and the Seeds ripen in Autumn.

The 2d Sort hath Roots composed of many thick fleshy Fibres; to each of which is fastened an oblong Tuber, as large as small Potatoes; the Leaves are long and flexible, having sharp Edges; these grow in irregular Clusters, from the Crown of the Root; between these come out the Stalks, which rise more than three Feet high, sending out several Side Branches, which are naked; the upper Part of these are adorned with many white Star-shaped Flowers, consisting of one Leaf cut into six Parts, each having a purple Line running lengthways on the Outside of each Segment. The Flowers grow in long Spikes, flowering gradually upward; and come out the Beginning of June; the Seeds ripen in Autumn.

The 3d Sort hath Roots like the 2d, but the Leaves are longer and narrower; the Stalks of this are single, never putting out any Side Branches; the Flowers are of a purer white, and grow in longer Spikes. This flowers at the same Time with the former.

The 4th Sort hath Roots composed of smaller Fibres than the two last, nor are the Knobs at Bottom half so large; the Leaves are long, almost triangular, and hollow like the Keel of a Boat; the Stalks seldom rise above two Feet, and divide into several spreading Branches; these are terminated by loose Spikes of white Flowers, smaller than the former; it flowers at the same Time, and produces Plenty of Seeds in Autumn.

These three Sorts are undoubtedly different Species; for I have several Years propagated them by Seeds, and have never yet found either of them to vary.

The 5th Sort is an annual Plant; the Roots of this are composed of many fleshy Fibres, which are yellow; the Leaves are spread out from the Crown of the Root, close to the Ground, in a large Cluster; these are convex on their under Side, but plain above, and hollow like a Pipe; the Flower Stalks rise immediately from the Root, and grow about two Feet high, dividing into three or four Branches upward, which are adorned with white starry Flowers, with purple Lines on the Outside. These flower in July and August, and their Seeds ripen in October, soon after which the Plants decay. It grows naturally in the South of France, Spain, and Italy.

The 1st Sort grows naturally in many of the Islands of the Archipelago, also in Sicily. The 2d, 3d, and 4th grow naturally in Portugal, Spain, and Italy; the 3d Sort is not quite so hardy as either of the other, so the Roots must be covered in very severe Frost.

The yellow Sort multiplies very fast by Roots, and will soon overspread a large Border, if suffered to remain unremoved, or the Side Roots are not taken off; but the other Sorts are not so productive of Shoots from their Sides, and are much better kept within Bounds.

The 2d and 3d Sorts do not increase very fast by their Roots, nor should they be often transplanted, for that will weaken them, so that their Flower Stems will not rise

rise so tall, or produce so many Flowers; as when left undisturbed for some Years; therefore the best Way is to propagate these by Seeds. The 4th Sort will increase much faster by Roots; and the Seeds when permitted to scatter, will grow in Plenty.

These 4 Sorts of Asphodel are very pretty Ornaments for a Flower Garden, and, requiring very little Trouble, are more acceptable. They may be all propagated by Seeds, which should be sown soon after they are ripe, on a warm Border of light fresh Earth. In Spring the Plants will appear, when you should carefully clear them from Weeds, and in dry Weather they must be frequently watered: If this be duly observed, the Plants will have acquired Strength enough to be transplanted by the *Michaelmas* following; at which Time you must prepare a Bed of fresh Earth in the Flower Nursery, into which you should plant the Roots, at about six Inches Distance every Way; observing to plant them so low, as that the Top of the Roots may be three or four Inches under the Surface of the Bed; and some old Tan, or Dung should be spread over the Surface of the Ground, to keep out the Frost: In this Bed they may remain one Year, during which Time they should be kept clear from Weeds. The Roots having acquired Strength enough to produce Flowers the following Year, they should, at *Michaelmas*, when their Leaves are decayed, be carefully taken up, and transplanted into the Flower Garden, observing to place them in the Middle of the Borders, amongst other hardy Flowers, where being properly intermixed, they will make an agreeable Variety, and continue a long Time in Flower.

The 5th Sort is an annual, so is only propagated by Seeds, these should be sown in Autumn; when the Plants are up, they require no other Trouble but to keep them clean from Weeds, until they have put out four or five Leaves, when they should be carefully removed to the Places where they are to remain. If the Seeds of this Plant are permitted to scatter, the Plants will come up without Care, and those which are not removed, will be the strongest, and produce a greater Number of Flowers.

The 6th Sort was raised from Seeds in the *Chelsea Garden*, Anno 1751, where it produced Flowers the following Year. The Seeds came from the *Cape of Good Hope*, where this Plant naturally grows.

The Roots of this Plant are composed of many Tubers or Fangs, each about the Size of a little Finger, toward the upper Part, where they are largest, and diminish gradually downward to the Size of a small Straw. These are joined together at the Crown (like the Roots of *Asparagus*), where the Buds are formed; from whence the Leaves are produced, which are generally seven or eight in Number, coming out without any Order. These are nine or ten Inches in Length, and an Inch and Half broad in the Middle, lessening gradually to both Ends; they are smooth, and of a glaucous or Sea-green Colour. From the Center of the Root arises the Flower Stem, which grows about two Feet and a Half high, and divides into several Branches, having a few narrow Leaves, generally one being placed at every Division of the Branch. The Flowers are produced thinly on the Branches, forming a loose Spike or Thyrsus; they are white, and consist of one Leaf, which is deeply

cut into six Parts; in the Center is placed the Germen supporting the Pointal, attended by six Stamina which are inserted in the Valves of the Nectarium, and are alternately short. The Germen becomes a roundish Seed Vessel, opening in three Cells, which are filled with triangular Seeds.

This Plant is too tender to live through the Winter in the open Air in England, so must be kept in Pots and housed in Winter, or placed under a hot Bed Frame, where the Frost is kept out by Covering; in which Management, the Plants will thrive better than in a common Green-house. In Winter these Plants must have little Wet, for much Moisture at that Season, is apt to rot their Roots. It is propagated by Seeds, for the Roots do not increase in England.

ASTER. Starwort.

The Characters are,

It hath a compound Flower, composed of several female and hermaphrodite Flowers included in one common scaly Empalement; the Rays or Border of the Flower is composed of several female Flowers, whose upper Parts are stretched out on one Side like a Tongue, and indented in three Parts at the End; the hermaphrodite Flowers form the Disk or Middle; these are Funnel-shaped, and divided at the Top into five Parts, which spread open, and have each five short slender Stamina, crowned with cylindrical Summits; in the Bottom is placed a crowned Germen, supporting a slender Style crowned by a bifid Stigma; the Germen becomes an oblong Seed, crowned with Down: The female Flowers have a Germen supporting a slender Style, crowned by two oblong Stigma, which turn backward. These have no Stamina, but in other Respects are like the hermaphrodite Flowers.

The Species are,

1. *ASTER foliis lanceolatis hirtis, radicalibus obtusis, caule simplicissimo unifloro.* Lin. Sp. Plant. 872. Starwort with hairy Spear-shaped Leaves, those near the Root blunt, and a single Stalk, having one Flower. *Aster montanus caeruleus.* C. B. P. 267. Blue Mountain Starwort with a large Flower, and oblong Leaves.

2. *ASTER foliis lanceolatis obtusis scabris trinerviis integris, pedunculis nudiusculis corymbosis squamis calycinis obtusis.* Lin. Sp. Plant. 873. Starwort with rough blunt Spear-shaped Leaves, which are entire, having three Veins, naked Foot Stalks in a Corymbus, and blunt Scales to the Empalement. *Aster atticus caeruleus.* Blue Attick Starwort, vulgarly called Italian Starwort.

3. *ASTER foliis lanceolatis integerrimis carnosiss glabris ramis inequalis, floribus corymbosis.* Lin. Sp. Plant. 872. Starwort with smooth fleshy Spear-shaped Leaves, which are entire, unequal Branches, and Flowers in a Corymbus. *Aster maritimus,* Sea Starwort called *Tripolium*.

4. *ASTER foliis linearibus acutis integerrimis, caule corymboso ramosissimo.* Hort. Cliff. 408. Starwort with narrow pointed Leaves, which are entire, and a very branchy Stalk growing in a Corymbus. Starwort with a Flower of *Tripolium*, and a very narrow thin Leaf.

5. *ASTER foliis lanceolatis alternis integerrimis semialexicaulibus, floribus terminalibus.* Hort. Cliff. 408. Starwort with entire Spear-shaped Leaves, growing alternate, and half embracing the Stalks, which are terminated by Flowers. Tallest hairy New England Starwort with large purple Violet Flowers.

6. *ASTER foliis cordato-lanceolatis undulatis floribus racemosis ascendentibus.* Hort. Cliff. 408. Starwort with Heart Spear-shaped waved Leaves; and Flowers growing in ascending Spikes. Purple New England Starwort with the Appearance of Golden Rod, and waved Leaves.

7. *ASTER foliis semiamplexicaulibus lanceolatis serratis scabris, pedunculis alternis subunifloris calycibus disco superantibus.* Hort. Cliff. 408. Starwort with rough sawed Spear-shaped Leaves, half embracing the Stalks, Foot Stalks growing alternate, with a single Flower, whose Empalement is higher than the Disk. Broad leaved American Starwort with purplish Stalks.

8. *ASTER floribus ovatis disco radiis longiore.* Lin. Sp. Plant. 877. Starwort with oval Flowers, whose Disk is longer than the Rays. Late flowering white Starwort like Heath, and the Disk like Wild Melilot.

9. *ASTER foliis lanceolatis subserratis sessilibus caule paniculato ramulis unifloris solitariis calycibus squarrosis.* Hort. Cliff. 408. Starwort with Spear-shaped Leaves, somewhat jagged and growing close to the Stalk, which is loose and spiked, and Branches having a single Flower with a rough Empalement. Broad leaved umbellated Starwort of New Holland, with pale Violet Flowers.

10. *ASTER foliis lanceolato-linearibus subcarnosis integerrimis planis floribus corymbosis fastigiatis pedunculis foliolosis.* Lin. Sp. Plant. 874. Starwort with narrow Spear-shaped fleshy Leaves which are plain and entire, Flowers gathered into a Corymbus, and leafy Foot Stalks. Starwort with the Tripolium Flower.

11. *ASTER caule simplicissimo foliis ovatis sessilibus integerrimis racemo terminali.* Flor. Virg. 178. Starwort with single Stalks, oval entire Leaves growing close to the Stalks, which end in a loose Spike.

12. *ASTER caule paniculato pedunculis racemosis pedicellis foliosis foliolis linearibus integerrimis.* P. V. Starwort with a spiked Stalk, branching Foot Stalks, and the smaller Foot Stalks which are leafy, garnished with small narrow entire Leaves. Bushy Heath like Starwort.

13. *ASTER foliis cordatis serratis petiolatis, caule paniculato.* Hort. Cliff. 408. Starwort with sawed Heart-shaped Leaves, having Foot Stalks, and a loose spiked Stalk. Broad leaved autumnal Starwort.

14. *ASTER foliis lanceolato-linearibus medio serratis pedunculis foliosis caule racemoso calycibus erectis.* Hort. Cliff. 408. Starwort with narrow Spear-shaped Leaves, sawed in the Middle, leafy Foot Stalks, branching Stalks, and upright Flower Cups. American Starwort with Leaves like Summer Cypress, and bluish white Flowers growing in very long Spikes.

15. *ASTER caule corymboso foliis lanceolatis reflexis, floribus solitariis, calycibus patulis.* Flor. Leyd. 168. Starwort with a corymbous Stalk, Spear-shaped reflected Leaves, and single Flowers with spreading Empalements. Pyramidal Virginia Starwort with rough Hyssop Leaves, and leafy Scales to the Empalement.

16. *ASTER foliis lanceolatis scabris integris, caule ramoso, pedunculis foliosis, calycibus obtusis.* Starwort with rough Spear-shaped entire Leaves, a branching Stalk, leafy Foot Stalks, and blunt Empalements. *Aster Atticus Alpinus alter.* Another Attick Starwort of the Alps.

17. *ASTER foliis oblongo-lanceolatis acutis serratis caule ramoso floribus terminalibus calycibus linearibus erectis.* Starwort with oblong Spear-shaped pointed Leaves, which

are sawed, a branching Stalk, terminated by Flowers whose Empalements are very narrow, and erect. Starwort with smooth jagged Leaves, growing scatteringly like those of the Peach Tree, and pale blue Flowers.

18. *ASTER foliis oblongis acutis basi latioribus semiamplexicaulibus, caule ramoso floribus terminalibus plerumque solitariis.* Starwort with oblong pointed Leaves, which are broader at the Base, and half embrace the Stalks, which are branchy, and terminated with Flowers, for the most Part singly. Late blue shrubby Starwort of John Tradescant, commonly called Michaelmas Daisy.

19. *ASTER caule erecto hirsuto foliis oblongis acutis scabris acutè dentatis semiamplexicaulibus floribus corymbosis calycibus hirsutis erectis.* Starwort with a hairy upright Stalk, oblong pointed rough Leaves sharply indented, and hairy erect Empalements. Early Pyrenean Starwort with a large blue Flower.

20. *ASTER caule altissimo hirsuto simplicissimo foliis oblongis acutis basi latioribus semiamplexicaulibus floribus tribus sessilibus terminalibus.* Starwort with a very tall hairy unbranched Stalk, oblong pointed Leaves, which are broader at the Base, and half embrace the Stalks, which are terminated by three Flowers sitting very close.

21. *ASTER caule ramosissimo patulo, foliis lineari-lanceolatis rigidis, floribus seriatim positissimis pedunculis foliosis.* Starwort with a very branching spreading Stalk, narrow Spear-shaped stiff Leaves, Flowers placed one above another, and leafy Foot Stalks.

22. *ASTER foliis lanceolatis acutis scabris, caule simplici floribus umbellatis terminalibus.* Starwort with rough pointed Spear-shaped Leaves, and a single Stalk, terminated by Flowers, growing in an Umbel.

23. *ASTER foliis nervosis lanceolatis acutis linearibus, caule simplici floribus terminalibus quasi umbellatis dispositis.* Starwort with narrow Spear-shaped pointed nervous Leaves, and a single Stalk, terminated by Flowers growing almost in an Umbel.

24. *ASTER foliis inferioribus ovatis basi semiamplexicaulibus, superioribus lanceolatis parvis caule paniculato ramis unifloris pedunculis foliosis.* Starwort with the lower Leaves oval, whose Base half embraces the Stalks, the upper Leaves small and Spear-shaped, a Stalk terminated by a loose Spike, with a single Flower on each Branch, and a leafy Foot Stalk.

25. *ASTER floribus terminalibus solitariis foliis linearibus alternis.* Flor. Virg. 98. Starwort with single Flowers at the ends of the Branches, and very narrow Leaves placed alternately.

26. *ASTER foliis lineari-lanceolatis acutis sessilibus caule paniculato, ramis unifloris pedunculis foliosis linearibus.* Starwort with narrow pointed Spear-shaped Leaves, growing close to the Stalks, which end in loose Spikes, and Branches ending with a single Flower, whose Foot Stalks have narrow Leaves. Canada Starwort with a Toad-Flax Leaf.

27. *ASTER foliis lineari-lanceolatis glabris trinerviis floribus corymbosis terminalibus.* Starwort with smooth, narrow, Spear-shaped Leaves, with three Veins, and Flowers in a Corymbus, which terminate the Stalks. Broad leaved Starwort with the Tripolium Flower.

28. *ASTER foliis linearibus integerrimis caule paniculato.* Hort. Cliff. 408. Starwort with very narrow Leaves, which are entire, and a loose Spike of Flowers. New

England

England Starwort with Toad-flax Leaves, and a Chamomile Flower.

29. *ASTER foliis lanceolatis sessilibus integerrimis caule paniculato pedunculis foliosis.* Starwort with Spear-shaped Leaves which are entire, adhering to the Stalk, which is terminated by a loose Spike of Flowers, with leafy Foot Stalks. Broad leaved Starwort of New Holland, with deep violet Flowers growing in loose Spikes.

30. *ASTER foliis lanceolatis lateribus inferiorum crenatis radice annua, caule Corymbofo pedunculis nudis.* Hort. Cliff. 409. Starwort with Spear-shaped Leaves, the Sides of the lower Leaves jagged, an annual Root, and Stalks ending with a Corymbus of Flowers, with naked Foot Stalks. Annual branching Canada Starwort.

31. *ASTER caule ramoso scabro perenni, foliis ovatis oppositis pedunculis nudis unifloris.* Fig. Pl. Tab. 76. Starwort with a rough perennial branching Stalk, oval Leaves growing opposite, and naked Foot Stalks with one Flower.

32. *ASTER foliis linearibus fasciculatis punctatis, pedunculis unifloris nudis, caule fruticoso rugoso.* Hort. Cliff. 409. Starwort with narrow pointed Leaves growing in Clusters, naked Foot Stalks with one Flower, and a shrubby wrinkled Stalk. Shrubby African Starwort, with narrow Leaves, for the most part joined together.

33. *ASTER foliis ovatis angulatis dentatis, petiolatis calycibus terminalibus patentibus foliosis.* Hort. Cliff. 407. Starwort with oval angular indented Leaves, and the Empalements terminated by spreading Leaves. Annual Starwort with a Goose Foot Leaf, and a large beautiful Flower, commonly called China Aster.

34. *ASTER foliis pinnatis.* Hort. C. 407. Starwort with winged Leaves. American Starwort with winged and sawed Leaves, and an orange coloured Flower.

35. *ASTER hirsutus foliis lanceolatis semiamplicaulibus floribus quasi umbellatim dispositis.* Hairy Starwort with Spear-shaped Leaves, half embracing the Stalks, and Flowers growing almost in an Umbel. Hairy Carolina Starwort with Leaves like blue Fleabane, and yellow Flowers disposed in an Umbel.

36. *ASTER foliis ovatis dentatis caule procumbente, pedunculis nudis axillaribus unifloris.* Starwort with oval indented Leaves, a trailing Stalk, and naked Foot Stalks proceeding from the Side with a single Flower. Aster Americanus procumbens. Houst. Mss. Trailing American Starwort, with the Appearance of the lesser Daisy.

37. *ASTER caule fruticoso, ramis unifloris, foliis ovato-lanceolatis recurvis serrato ciliatis.* Lin. Sp. Pl. 877. Starwort with a shrubby Stalk, Branches with a single Flower, and oval, Spear-shaped, recurved Leaves, jagged at their Edges. Shrubby African Starwort with small reflexed shining Leaves.

The 1st Sort grows naturally upon the Alps, where it seldom rises more than six Inches high, and when transplanted into a Garden, not above nine Inches. It sends up a single Stalk from the Root, which is thinly garnished with oblong Leaves; at the Top of the Stalk is one large blue Flower, somewhat like those of the Italian Starwort. This flowers in June; the Root is perennial, but must be planted in a shady Situation, and a moist Soil. It is propagated by Seeds sown in Autumn.

The 2d Sort is the Italian Starwort, which was some Years past more common in Gardens than at present;

for since the great Variety of American Starworts have been introduced into England, this Sort hath not been so much cultivated; though it is by no means inferior to the best of them, and, in some respects, preferable to most of them; for it is not so subject to creep by the Root, as many of the American Sorts do; whereby they often become troublesome in small Gardens, nor do the Stalks require supporting as they do, for they seldom grow more than two Feet high, and the Stalks are very strong, so are very rarely broken by the Wind. These grow in large Clusters from the Root, and each of them branch at the Top into eight or ten Foot Stalks, each of which is terminated by a single large Flower, having blue Rays, with a yellow Disk. It flowers in October, and, in mild Seasons, will often continue till the Middle of November, during which Time they are very ornamental Plants in a Garden. This Sort is propagated by parting the Roots, the best Time for which is soon after they are out of Flower, for those which are removed in the Spring will not flower so strong the succeeding Summer. These Roots should not be removed oftener than every third Year where they are expected to produce many Flowers.

This Plant grows naturally in the Vallies of Italy, Sicily, and Narbonne, and is generally supposed to be the *Amellus* mentioned by Virgil, in his fourth Georgick, to grow in the Pastures; and the Leaves and Stalks being rough and bitter, the Cattle seldom browse upon it, so that whenever there are any of these Roots in the Fields, they send up a thick Tuft of Stalks, which being left after the Grass is eaten bare, these being full of Flowers, make a fine Appearance, and therefore might engage the Poet's Attention.

The 3d Sort grows naturally in Salt Marshes, which are flowed by the Tides, and is seldom admitted into Gardens. It flowers in July and August.

The 4th Sort is a Native of North America, but has been many Years in the English Gardens. It sends up many strong Shoots from the Root every Spring, which rise between four and five Feet high, and are garnished with oblong Leaves, placed alternately, and half embrace the Stalk with their Base; from the main Stalks, many Side Branches are put out, for near half their Length, these are garnished with smaller Leaves, which diminish in their Size to the Top, where there is a single Flower, terminating the Stalk, of a blue Colour. This flowers in August and September; it is easily propagated by parting the Roots, soon after the Flowers are past, and will thrive in any Situation.

The 5th Sort sends up many Stalks from the Root, which rise five Feet high; these are garnished with Spear-shaped Leaves which are entire, and half embrace the Stalks, which are terminated by large purple Violet Flowers, growing in a loose Panicle: It flowers in August, and is very hardy, so may be planted in any Soil or Situation, and is propagated by parting the Roots.

The 6th Sort grows naturally in North America. This hath broad Heart-shaped waved Leaves at the Bottom, the Stalks rise between two and three Feet high, which send out small Side Branches, upon which the Flowers come out in loose Spikes, of a very pale blue Colour inclining to white. This flowers in the same Season, and may be propagated as the former.

The 7th Sort sends up several strong Stalks, upward of

two Feet high, which are of a purple Colour, and are garnished with Spear-shaped smooth Leaves, whose Base embraces the Stalks half round; the Flowers grow upon single Foot Stalks, forming a Corymbus at the Top, and are of a pale blue Colour; these appear the latter End of September. It comes from North America, and may be propagated as the former.

The 8th Sort rises with slender Stalks, upward of 3 Feet high; these send out many weak Branches on every Side, which are garnished with very small Leaves; the Flowers come out on short Foot Stalks, on every Side of the Branches, which are small, with white Rays and a yellow Disk. These appear in November, and often continue Part of December. This comes from the same Country, and may be propagated as the former.

The 9th Sort rises near 4 Feet high, having broad Leaves at the Bottom, which diminish gradually to the Top; the Flowers are produced in a loose Kind of Umbel at the Top of the Stalks, which are of a pale blue Colour; these appear the latter Part of August. This is hardy, and may be propagated as the former.

The 10th Sort grows naturally in the South of France and Italy; the Stalks of this divide into a great Number of Branches, which divide again toward the Top into several smaller; these are fully garnished with very narrow Leaves their whole Length; the Flowers grow in large Clusters at the Top, forming a Sort of Corymbus; they are of a pale bluish Colour, and appear the Beginning of August. This is hardy, and may be propagated by parting the Roots, as the former.

The 11th Sort rises 4 Feet high, with a single Stalk, and oval Leaves growing close to the Stalks, which are terminated by slender loose Spikes of pale blue Flowers, which appear about Michaelmas. It comes from North America, and is propagated as the former.

The 12th Sort sends up slender Stalks 3 Feet high, which send out slender Side Branches most of their Length, so as to form a thick Bush; these are garnished with very narrow Leaves their whole Length, and are terminated by single Flowers.

The 13th Sort grows about 2 Feet high, having slender Stalks, which are garnished with oblong pointed Heart-shaped Leaves, which are sharply sawed on their Edges; the upper Part of the Stalks is divided into several small Branches, which are terminated by white Flowers growing in loose Panicles. This flowers in September, and may be propagated as the former.

The 14th Sort sends up Stalks 5 Feet high, which put out many slender Side Branches, which are garnished with narrow Spear-shaped Leaves, and are terminated by Spikes of small white Flowers, which appear the End of October. This Sort spreads greatly at the Root, so is apt to over-run the Borders.

The 15th Sort hath narrow oblong hairy Leaves at the Bottom; the Stalks rise three Feet high, and are garnished with small narrow rough Leaves which turn backward; the Stalks send out many Side Branches, each being terminated by a single large blue Flower. It flowers the End of October, and continues most Part of November, when it makes a fine Appearance. It doth not multiply fast by its Roots, but may be propagated in Plenty, by Cuttings made from the young Shoots in May, which if planted in a Bed of light Earth, and shaded from the

Sun, will take Root, and these will flower the same Year. It is commonly called by the Gardeners *Catefby's Starwort*, from Mr. *Catefby*, who brought it from *Virginia*.

The 16th Sort sends up several Stalks a Foot and a Half high, which are garnished with rough Spear-shaped Leaves, sending out many Side Branches which diverge from the Stalk every Way; these are terminated for the most Part by one large blue Flower, somewhat like those of the *Italian Starwort*, but paler and comes earlier to flower. It grows naturally on the *Alps*, and is propagated by parting the Root.

The 17th Sort rises to the Height of 5 Feet, with branching Stalks, garnished with oblong Spear-shaped Leaves, which are sawed on their Edges. Each of the Side Branches are divided at the Top into several Foot Stalks, which are terminated by large pale blue Flowers, in October. This grows naturally in *North America*, and is propagated by parting the Roots.

The 18th Sort was brought from *Virginia* many Years ago, by Mr. *John Tradescant*, and from his Garden it was soon dispersed, and became common. It is generally known by the Title of *Michaelmas Daisy*, from its flowering about old *Michaelmas Day*. The Stalks of this Sort are numerous, and rise about three Feet high, being fully garnished with oblong Leaves ending in a Point, whose Base half embraces the Stalks. These shoot out many lateral Branches, terminated by pretty large Flowers, of a very pale bluish Colour tending to white. The Roots multiply very fast, and the Seeds often are blown about, so that it propagates so much as to be troublesome; it will thrive in any Situation.

The 19th Sort sends up several strong hairy Stalks, which rise a Foot and a Half high, having many oblong rough Leaves ending in a Point, whose Base half embraces the Stalks, which divide into many small Branches at the Top, forming a Kind of Corymbus, each being terminated by one large blue Flower, having a very hairy Empalement. This flowers the latter End of July. It grows naturally on the *Alps*, so is very hardy, but should have a moist Soil and a shady Situation. It is propagated by parting of the Roots.

The 20th Sort rises with strong hairy Stalks, to the Height of 8 or 9 Feet, which are upright, unbranched, and garnished with oblong hairy Leaves ending in a Point, and their Base half surrounds the Stalks, which are for the most Part terminated by three large purple Flowers inclining to red, and sit close to the Top of the Stalk, surrounded by a few narrow Leaves. This Sort flowers in November. It came from *Philadelphia*, where it naturally grows, and is propagated by parting the Roots; it delights in a moist Soil.

The 21st Sort hath slender purplish Stalks, which rise about three Feet high, sending out many Side Branches almost their whole Length, which spread horizontally, and are garnished with narrow small Spear-shaped Leaves; the Flowers are produced in a Sort of loose Spike, growing one above another on each Side the Stalk. They are small, of a pale purplish Colour, and appear in November. It grows naturally in *North America*, and is easily propagated by parting the Roots.

The 22d Sort grows naturally in *Philadelphia*. This sends up stiff channeled Stalks about two Feet high, garnished with rough Spear-shaped Leaves ending in a Point,

which are placed alternately on every-Side the Stalks; the Flowers are white, and grow in a Sort of Umbel at the Top of the Stalks. It flowers the End of September, and is propagated by parting the Roots.

The 23d Sort I received from *Pennsylvania*. This hath much the Appearance of the former Sort, but the Leaves are narrower, whiter on their under Side, and have three longitudinal Veins; the Flowers are also larger and whiter. It grows about the same Height, and flowers at the same Time with the former.

The 24th Sort rises four Feet high, the Bottom Leaves are oval and half surround the Stalk at their Base; the upper Leaves are small and Spear-shaped, the Stalks put out Side Branches toward the Top, which grow erect, forming a loose Spike, each being terminated by one large blue Flower, with a leafy Foot Stalk; this flowers about the End of October. It grows naturally in *North America*, and is propagated by parting the Roots.

The 25th Sort sends up several slender Stalks near three Feet high, garnished by many very narrow Leaves, and puts out Side Branches, each being terminated by one white Flower. This grows naturally in *Philadelphia*; it flowers in November, and is easily propagated by parting the Roots.

The 26th Sort rises about a Foot and a Half high, the Stalks are garnished with very narrow smooth Spear-shaped Leaves; at the End of the Stalks many Foot Stalks are sent out on every Side, each being terminated by one pale blue Flower, having a leafy Foot Stalk. This grows naturally in *Canada*, and is propagated by parting the Roots.

The 27th Sort grows about two Feet high, with erect Stalks garnished with narrow smooth Spear-shaped Leaves, which come out irregularly in Clusters; from the upper Part of the Stalks, there are a few Side Branches produced, garnished with very narrow Leaves; the Flowers are in Form of a Corymbus at the End of the Stalks, of a pale blue Colour, and appear in September. This is propagated by parting the Roots.

The 28th Sort rises with slender Stalks about three Feet high, which are garnished with very narrow Leaves, and terminated by loose Panicles of Flowers, whose Rays are white and their Disks yellow. This flowers in October, and is propagated by parting the Roots.

The 29th Sort sends out many strong Stalks, which rise about three Feet high, dividing into several Side Branches, garnished with Spear-shaped Leaves growing close to the Branches, which are terminated by loose Spikes of dark blue Flowers, which appear in October. This is propagated by parting the Roots.

The 30th Sort is an annual Plant, which when once introduced into a Garden, the Seeds will scatter, and the Plants come up without Care. This sends up strait Stalks about two Feet high, which are terminated by white Flowers growing in Form of a Corymbus. It flowers in August, and the Seeds ripen in October.

We have some other Varieties of *American Starworts*, which are supposed to be seminal Variations, therefore I have not enumerated them as distinct Species. Those which are here mentioned, I have cultivated many Years, and have not found them vary when raised from Seeds; for most of them perfect their Seeds in *England*, so may be propagated by sowing them in the Autumn, soon after

they are ripe; for if the Seeds are kept out of the Ground till Spring, few of them will grow, or will lie in the Ground a whole Year before the Plants appear. But as the greatest Part of them increase fast by their spreading Roots, their Seeds are rarely sown.

The 31st Sort grows naturally at the *Cape of Good Hope*, from whence the Seeds were sent me in 1753, but without any Title. These were sown in October, and the following Spring two Plants came up from them in the *Chelsea* Garden, which have flourished extremely well, and have been propagated since in Plenty.

The Plant has many fibrous Roots, from which arises a purplish rough Stalk, which divides into many Branches near the Root, so as to form a low bushy Plant, for it seldom rises more than two Feet high, but the Branches will extend more than a Foot on every Side: These are garnished with oval Leaves about an Inch long, and a third Part of an Inch broad; they are pretty thick and succulent, and are rough to the Touch, coming out at the Joints of the Stalks by Pairs opposite, and sometimes three at a Joint, or in other Places two larger and two smaller at the same Joint, having no Foot Stalks: Toward the upper Part of the Branches, the Foot Stalks of the Flower arise, which are from four to six Inches long, and naked, each supporting a single radiated Flower.

The Rays of the Flower are of a fine Sky-blue Colour, which, after they have been some Time expanded, turn back toward the Empalement; the Disk of the Flower is yellow. After the Flower falls away, each of the Florets which compose the Disk is succeeded by a single Seed, crowned with a soft Down. The whole Plant is a little acid to the Taste.

This Plant is never destitute of Flowers the whole Year, for in the Winter Season, there will always be a Number of them in Beauty, though at that Time they are not so numerous, or quite so large as in Summer; however, they make a fine Appearance at all Seasons; and as they only require to be protected from Frost, they deserve a Place in every curious Garden. The Plants which I raised in the *Chelsea* Garden, placed in a Frame with only wooden Shutters to cover them in the Frost, have been as vigorous, and continued flowering through the Winter, full as well as those placed in the Green-house; but they will not live in the open Air, for in order to try if they might be naturalized to this Country, I sowed some of the Seeds the two last Springs, in a Bed of dry Earth, in a warm Situation, where the Plants came up very well, grew strong all the Summer, and in Autumn produced Flowers, but the first hard Frost entirely destroyed them. This Plant perfects its Seeds very well, so may be propagated by sowing them in April, in a Bed of light Earth; and when the Plants are large enough to transplant, they should be each put into a separate small Pot, and placed in the Shade, until they have taken fresh Root, when they may be set in the open Air till toward the End of October, at which Time they should either be removed into the Green-house, or put under a hot Bed Frame to screen them from the Frost in Winter. It may also be propagated by Cuttings, planted in a shady Border any Time in Summer, and when rooted must be treated as the Seedlings.

The 32d Sort grows naturally at the *Cape of Good Hope*. This rises with a woody Stem about three Feet high,

high, sending out many Side Branches which are lig-
neous, and garnished with narrow Leaves coming out in
Clusters from one Point, like those of the Larch Tree;
the Flowers are produced from the Side of the Branches,
upon long slender Foot Stalks singly; these are of a pale
blue Colour, and appear the Beginning of *March*; as
this Plant never produces Seeds in *Europe*, it is only pro-
pagated by Cuttings, which may be performed any
Time in the Summer. These should be planted in small
Pots filled with light Earth, and plunged into an old hot
Bed; where, if they are shaded from the Sun, and gently
watered, they will put out Roots in 6 Weeks, when they
may be placed in the open Air; and in about a Month
after they should be separated, and each planted into a
small Pot filled with light sandy Earth. In *October* these
must be removed into the Green-house, and placed where
they may enjoy as much free Air as possible, but secured
from Frost or Damps, either of which will destroy them;
so that they are much easier preserved in a Glass Case,
where they will enjoy more light and Air; but they
must not be placed in a Stove, for artificial Heat will
soon destroy them. This Sort is at present but in few
English Gardens.

The 33d Sort is a Native of *China*, from whence the
Seeds were sent to *France* by the Missionaries, where
the Plants were first raised in *Europe*. In the Year 1731,
I received Seeds of this, from which I raised Plants with
red, and some with white Flowers; and in 1736 I re-
ceived Seeds of the blue Flower, but these were all single.
They came by the Title of *La Reine Marguerette*, or the
Queen of Daisies, by which Title the *French* still call it.
In 1752, I received Seeds of the double Flowers both
red and blue; and in 1753 the Seeds of the double white
Sort. These have retained their Difference from that
Time without Variation, yet as they are generally
supposed to be only Varieties, so I have not inserted them
as different Species.

As these are annual Plants, they are only propa-
gated by Seeds, which must be sown in Spring upon a
gentle hot Bed, just to bring up the Plants; for they
should be insured to the open Air as soon as possible, to
prevent their being drawn up very weak: When the
Plants are big enough to remove, they should be care-
fully taken up and planted in a Bed of rich Earth at 6
Inches Distance each Way, observing to shade them
from the Sun till they have taken new Root; and if the
Season proves dry, they must be often refreshed with
Water. In this Bed they may remain a Month or 5
Weeks, by which Time they will be strong enough to
transplant into the Borders of the Flower Garden where
they are designed to remain; the Plants should be taken
up carefully, with large Balls of Earth to their Roots,
and the Ground dug up and well broken with the Spade,
where the Holes are made to receive the Plants: After
they are planted, and the Earth closed about their Roots,
there should be some Water given them to settle the
Earth. This Work should, if possible, be done when
there is Rain, for then the Plants will soon take new
Root, after which they require no other Care but to
keep them clear from Weeds.

In *August* these Plants will flower, by which Time if
the Ground is rich in which they are planted, they will
be 2 Feet high, and furnished with many Side Branches,

each of which is terminated by a large radiated Flower,
some white, some red, and others blue. These are some
of the greatest Ornaments in the Flower Garden in
Autumn. The Seeds ripen the Beginning of *October*,
which should be gathered when perfectly dry; and in
order to preserve the Kinds with double Flowers, those
which grow upon the Side Branches, which are com-
monly fuller of Leaves than the Flowers on the main
Stem, should always be preserved for Seeds.

The 34th Sort was discovered by Dr. *Houssoun* in 1731,
at *La Vera Cruz* in *New Spain*. This is an annual Plant,
which rises with an upright Stalk about a Foot high,
and is garnished the whole Length with winged Leaves,
each consisting of two or three Pair of Lobes, and ter-
minated by an odd one: Each of these Lobes are Heart-
shaped, and sawed on their Edges; at the Top of the
Stalk is produced one large Orange-coloured Flower,
having a single Empalement, cut into many slender Seg-
ments which end in Points: After the Flower is past,
each Floret is succeeded by an oblong angular Seed,
crowned with long Down. This Plant is propagated by
Seeds, sown on a moderate hot Bed in Spring; and when
the Plants are fit to remove, they must be each planted
in a small Pot filled with rich Earth, and plunged into
the Tan-Bed, observing to shade them until they have
taken new Root, as also to refresh them with Water,
and in warm Weather admit free Air to the Plants.
When these Pots are filled with their Roots, the Plants
should be carefully shaken out; and after paring off the
Outside Roots, put into larger Pots, filled with light
Earth, and plunged into the hot Bed again, where they
may remain to flower and perfect their Seeds, for they
will not thrive in the open Air. This Sort flowers in
July; and the Seeds ripen in *September*.

The Seeds of the 35th Sort were sent me from *South
Carolina*, in 1742, which succeeded in the *Obelisk* Gar-
den, where the Plants flowered the following Year; but
the Season proved too cold to ripen the Seeds, and the
Plants being biennial, they perished in Winter.

This Plant produces many hairy oblong Leaves near
the Root, which come out without any Order. They
are from 4 to near 6 Inches long, and almost an Inch
broad. From between these Leaves the Stalk arises im-
mediately from the Root, 2 Feet and a Half high, send-
ing out several Side Branches; all these are garnished
with hairy Leaves of the same Shape with those at Bot-
tom but smaller, and are placed alternately on the
Branches, which they closely embrace, having no Foot
Stalk. At the Top of the Stalk the Flowers are pro-
duced, which are large and of a yellow Colour, composed
of many half Florets, which form the Border or Ray;
the Disk in the Center is composed of several Florets,
each having a Pointal in the Middle, and attended by 5
slender Stamina, which do not extend beyond the Co-
rolla. At the Bottom of the Pointal is placed the Em-
bryo, crowned with a pappous Down, which serves to
waft the Seeds abroad when they are ripe. These are
included in one common scaly Empalement.

The 36th Sort was discovered by Dr. *William Houssoun*,
in 1729, growing in Plenty in the sandy Ground about
La Vera Cruz, in *America* where he drew the Figure,
and made a Description of the Plant upon the Spot;
which he sent to *England* with the Seeds, some of which
grew

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grew in the *Chelsea* Garden, and the Plants flowered the following Summer, but did not perfect Seeds.

It hath bushy fibrous Roots, which creep in the Ground, and send out many slender round Stalks, which bend and incline to the Ground. These are about four or five Inches long, destitute of Leaves, each sustaining one Flower, in Shape and Size of those of the common Field Daisy, of a whitish purple Colour, but the Rays are narrower. The Disk is composed of several Florets, which are succeeded by small Seeds crowned with a pappous Down. The Empalement which includes the Flowers, is scaly.

This Plant is a Native of a warm Climate, therefore the Seeds must be sown in a hot Bed, and the Plants require a Stove to maintain them through the Winter.

The 37th Sort is a Native of the *Cape of Good Hope*; this rises with a slender woody Stalk about two Feet high, sending out several weak Branches from the Side, reflexed and garnished their whole Length with small oval Leaves which turn backward; at the Extremity of the Branches a single Flower is produced, which hath white Rays and a yellow Disk. These appear in February and March, but do not produce Seeds here.

It is propagated by Cuttings, planted in August, in small Pots filled with light sandy Earth, and plunged into a moderate hot Bed of Tanners Bark, where they will take Root in about six Weeks, when they must be injured to the open Air. In Winter they should be removed into an airy Glass Case, where they may enjoy as much Light and free Air as possible, but screened from Frost. This Plant is difficult to preserve in Winter.

ASTERISCUS. See Bupththalmum.

ASTEROIDES, Bastard Starwort. See Inula.

ASTRAGALOIDES. See Phaca.

ASTRAGALUS, Wild Liquorice, Liquorice Vetch, or Milk Vetch.

The Characters are,

It hath a Butterfly Flower, whose Empalement is of one Leaf, which is cut into five acute Segments at the Top. The Standard (or Vexillum) is upright, blunt and reflexed on the Sides; the Wings are oblong, and shorter than the Standard; the Keel is the same Length with the Wings, and bordered. It hath ten Stamina, nine of which are joined, and one stands singly; these are crowned by roundish Summits. At the Bottom of the Flower is situated a taper Germen, supporting an Awl-shaped Style, crowned by a blunt Stigma. The Germen afterward becomes a Pod having two Cells, each having a Row of Kidney-shaped Seeds.

The Species are,

1. ASTRAGALUS caulescens prostratus leguminibus subtriquetris arcuatis foliis ovalibus pedunculo longioribus. L. S. P. Stalky prostrate Milk Vetch, with crooked Pods almost triangular, and oval Leaves longer than the Foot Stalk. Common wild perennial trailing Milk Vetch with yellow Flowers, sometimes called Wild Liquorice.

2. ASTRAGALUS caulescens procumbens, leguminibus subulatis recurvatis glabris. H. U. Stalky trailing Milk Vetch, with smooth Awl-shaped Pods bending inward. Yellow annual Milk Vetch of *Manspelier*, with trailing Stalks.

3. ASTRAGALUS caulescens, spicis cylindricis subsessilibus, calycibus leguminibusque lanatis. Lin. Sp. Plant. 755. Stalky Milk Vetch with cylindrical Spikes growing close

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to the Stalks, and woolly Pods and Empalements. Taller Foxtail Milk Vetch of the *Alps*.

4. ASTRAGALUS caulescens prostratus, leguminibus subglobosis inflatis mucronatis pilosis. Hort. Upsal. 226. Milk Vetch with a prostrate Stalk, and a globular swelling hairy Pod ending in a Point. Yellow perennial Milk Vetch, with a round double Pod resembling a Bladder.

5. ASTRAGALUS caulescens procumbens, leguminibus capitatis cordatis acutis reflexis complicatis. Lin. Sp. P. Milk Vetch with trailing Stalks, and Pods growing in Heads, which are Heart-shaped, pointed, reflexed, and complicated. Larger Spanish Milk Vetch, with Pods like the Epiglottis, and a purple Flower.

6. ASTRAGALUS subcaulos scapis folio longioribus, floribus laxè spicatis erectis. P. L. Low Milk Vetch with Flower Stalks longer than the Leaves, and Flowers growing in loose upright Spikes. Cock's-head with large Vetch Flowers of a purplish blue Colour, and Goat's-thorn Leaves.

7. ASTRAGALUS caulescens procumbens, spicis pedunculatis, leguminibus prismaticis rostris triquetris apice uncinatis. Hort. Up. Milk Vetch with trailing Stalks, Spikes of Flowers with Foot Stalks, and upright triangular Pods shaped like a Prism pointed at the Top. Trailing maritime annual Milk Vetch with broad Leaves and Flowers sitting upon Foot Stalks.

8. ASTRAGALUS subcaulescens procumbens floribus subracemosis erectis foliis tomentosis. Lin. Sp. Plant. 759. Low trailing Milk Vetch, with branching Flowers growing erect and woolly Leaves. Small hoary purple Milk Vetch.

9. ASTRAGALUS acaulos scapis folia æquantibus leguminibus inflatis subglobosis nudis. Lin. Sp. Plant. 760. Low Milk Vetch with Flower Stalks as long as the Leaves, and naked globular swelling Pods.

10. ASTRAGALUS caulescens erectus floribus glomeratis subsessilibus ex omnibus axillis foliaceis. Lin. Sp. P. Milk Vetch with upright Stalks, and glomerated Flowers growing close to them, proceeding from all the Wings of the Leaves.

11. ASTRAGALUS caulescens scapis folio longioribus floribus laxè spicatis erectis, leguminibus arcuatis. Stalky Milk Vetch with Flower Stalks longer than the Leaves, upright Flowers growing in loose Spikes, and arched Pods. Egyptian Milk Vetch, with Spikes of purple Flowers and incurved Pods.

12. ASTRAGALUS caulescens diffusus capitulis subsessilibus lateralibus leguminibus erectis subulatis acumine reflexis. H. C. Milk Vetch with diffused Stalks, Flower Heads growing close to the Sides of the Stalks, and Awl-shaped upright Pods reflexed at their Points. Annual Milk Vetch with hairy Leaves and Pods, many of them growing close to the Wings of the Leaves.

13. ASTRAGALUS caule recto paniculato pedunculis folio longioribus floribus sparsis. H. C. Milk Vetch with an upright loose spiked Stalk, and Flowers growing thinly, whose Foot Stalks are longer than the Leaf. Tallest Eastern Milk Vetch with a Goat's-rue Leaf, and a small yellowish Flower.

14. ASTRAGALUS acaulos scapo erecto foliis longiore leguminibus subulatis inflatis villosis erectis. H. U. Low Milk Vetch, with upright Foot Stalks to the Flowers longer than the Leaves, and Awl-shaped upright swollen hairy

hairy Pods. Hairy white unbranched Milk Vetch, with purple Violet Flowers growing in Spikes.

15. *ASTRAGALUS caulescens erectus laevis pedunculis spicatis leguminibus ovato-cylindricis stylo acuminatis.* Lin. Sp. P. Smooth upright stalky Milk Vetch, with spiked Foot Stalks, and oval cylindrical Pods ending in sharp Points. Taller untrailing Milk Vetch, with a yellowish green Flower.

16. *ASTRAGALUS caulescens diffusus leguminibus subcylindricis mucronatis foliis subtus subvillosis.* L. Sp. P. Milk Vetch with diffused Stalk, pointed cylindrical Pods, and the small Leaves hairy on their under Side. Canada Milk Vetch with a yellowish green Flower.

17. *ASTRAGALUS caulescens erectus pilosus floribus spicatis leguminibus subulatis pilosis.* Lin. Sp. Pl. 756. Milk Vetch with hairy upright Stalks, Flowers growing in Spikes, and Awl-shaped hairy Pods. Upright hairy Milk Vetch, with yellow Flowers growing in Spikes.

18. *ASTRAGALUS incanus caulibus procumbentibus scapis folio aequantibus floribus glomeratis.* Hoary Milk Vetch with trailing Stalks, Foot Stalks equal with the Leaves, and glomerated Flowers.

19. *ASTRAGALUS caulescens incanus, leguminibus subulatis recurvatis incanis.* Hoary stalky Milk Vetch, with Awl-shaped recurved Pods which are hoary.

20. *ASTRAGALUS caulescens capitulis globosis, pedunculis longissimis, foliis emarginatis.* H. C. Stalky Milk Vetch with globular Heads, very long Foot Stalks, and the small Leaves crenated at their Points.

The 1st Sort grows wild upon chalky Ground in many Parts of England, so is not often admitted into Gardens. The Root of this is perennial, but the Stalks decay every Autumn: It creeps at the Root, so that it is too apt to spread where it is suffered to grow. It flowers in June, and the Seeds ripen in September.

The 2d Sort is annual; the Branches of this trail upon the Ground on every Side the Root, which are striated; the Leaves are winged, and are composed of about eight Pair of Lobes, terminated by an odd one; these are crenated at their Points. The Foot Stalk of the Flowers arise from the Wings of the Leaves, which is about three Inches long, garnished toward the Top with a few pale yellow Flowers rising one above another; these are succeeded by oblong Pods, which bend in form of a Sickle, being round on their outer Side, but flattened on the opposite, ending in a Point, opening in two Cells, each having a Row of square Seeds. It flowers in June, and the Seeds ripen in September. The Seeds of this should be sown in April, in the Place where they are to remain and require no other Care, but to draw the Plants out where they come up too thick, leaving them a Foot and a Half asunder, and keep them clean from Weeds.

The 3d Sort is a biennial Plant, which grows naturally on the Alps. This rises with an upright hairy Stalk near three Feet high, garnished with long winged Leaves, each having eighteen or twenty Pair of oval Lobes, terminated by an odd one. The Flowers are produced in large cylindrical Spikes from the Wings of the Leaves, sitting very close to the Stalks, which are entirely covered with Down, out of which the yellow Flowers just peep; these are succeeded by oval Pods shut up in woolly Empalements, and have two Cells containing three or

four square Seeds in each. It flowers in June and July, and the Seeds ripen in Autumn, soon after which the Plants decay. The Seeds of this should be sown in April on an open Border, where the Plants are designed to remain; and when the Plants come up, they should be thinned, leaving them at least two Feet asunder, and keep them clean from Weeds, the 2d Year they will flower.

The 4th Sort hath a perennial Root which sends out several striated Stalks near three Feet long, which if not supported, bend toward the Earth; these are garnished with winged Leaves placed alternately, at two Inches Distance, which are composed of about ten Pair of oval small Lobes, terminated by an odd one. The Flowers arise from the Wings of the Leaves, upon Foot Stalks two Inches long, in small loose Spikes, which are yellow, shaped like the rest of this Genus, and are succeeded by hairy globular swelling Pods ending with a sharp Point, opening in two Cells, in each of which are contained two or three hard reddish Seeds. It flowers in July, and the Seeds ripen in Autumn. This grows naturally in the South of France and Italy. It is easily propagated by Seeds which should be sown upon an open Border in Spring; and when the Plants come up, they must be thinned and kept clean from Weeds till Autumn, when they should be transplanted to the Place where they are to remain. One or two of these Plants in a Garden by Way of Variety, may be admitted, but they have little Beauty.

The 5th Sort is annual. This sends out two or three hairy trailing Branches, which are garnished with winged Leaves, composed of ten or twelve Pair of blunt Lobes, terminated by an odd one: The Flowers come out from the Wings of the Leaves upon naked Foot Stalks, four or five Inches long, and are gathered into a round Head; these are shaped like the others, but are pretty large and of a deep purple Colour, which are succeeded by short Pods rough on their Outfides, and when opened are shaped like a Heart, ending in a sharp Point, containing three or four Seeds.

The Seeds of this should be sown on an open Border in April, where the Plants are to remain, and treated as the other annual Sorts before-mentioned. It flowers in July, and the Seeds ripen in Autumn. It grows naturally in Spain and Portugal, from whence I received the Seeds.

The 6th Sort is a perennial Plant, which grows naturally upon the Mountains in Spain, from whence I received it. This is a low Plant, seldom rising with a Stem more than three Inches high, sending out winged Leaves on every Side, composed of many Pairs of narrow Lobes, set very close together on the Midrib, which is terminated by an odd one. The Flowers grow upon long Foot Stalks, which rise above the Leaves; these are large and of a purple Colour, growing in a loose Spike, they stand erect, and are succeeded by oblong crooked Pods opening in two Cells, filled with square Seeds. It flowers in June, and the Seeds ripen in August. This is propagated by Seeds, which should be sown, and the Plants treated as the 4th Sort, but should have a shady Situation and a stronger Soil.

The 7th Sort is annual; this sends out several trailing Branches near two Feet long, garnished with winged Leaves, composed of about ten Pair of blunt Lobes, set thinly on the Midrib, terminated by an odd one: At the Wing

Wing of each Leaf comes out a Foot Stalk near 2 Inches long, sustaining 4 or 5 yellow Flowers at the Top, which are succeeded by triangular brown Pods, shaped like a Prism, growing erect, and opening in 2 Cells filled with greenish square Seeds. It flowers in July, and the Seeds ripen in Autumn, soon after which the Plants decay. This may be treated in the same Manner as the second.

The 8th Sort is a perennial Plant, which grows naturally upon Hills in England, particularly in the North. This is a low Plant, seldom rising more than 2 or 3 Inches high, having many winged Leaves composed of narrow woolly Lobes, placed close on the Midrib; the Flowers are pretty large, of a purple Colour, growing in loose Spikes. It flowers in June, and the Seeds ripen in August. This may be propagated as the 4th Sort, and should have a shady Situation.

The 9th Sort hath a perennial creeping Root, sending out Leaves on every Side, which are composed of many Pair of oval Lobes, terminated by an odd one; the Flower Stalks are as long as the Leaves, which support a cylindrical Spike of yellow Flowers, which are succeeded by swollen Pods, opening in two Cells, containing several greenish Seeds. This may be propagated as the 4th Sort, and must have a shady Situation. It flowers in June, and grows naturally in Siberia.

The 10th Sort was discovered by Dr. Tournefort in the Levant, who sent the Seeds to the Royal Garden at Paris, where they succeeded, from whence I was furnished with them. This sends up Stalks near 3 Feet high, which are large at Bottom, and gradually diminish to the Top; the Leaves also at Bottom are very long, and diminish upward, so as to form a Sort of Pyramid; these are winged, and composed of many large oval Pair of Lobes, which are placed thinly on the Midrib, and are terminated by an odd one; the Flowers come out in Clusters from the Wings of each Leaf, beginning near the Root where the Foot Stalks are the longest, and continuing upward most Part of the Stalk, diminishing in their Number. These are large, of a bright yellow Colour, and are succeeded by cylindrical Pods opening in 2 Cells, and filled with square yellow Seeds. It flowers in July, and in very favourable Seasons will perfect Seeds in England. It is propagated by Seeds, which should be sown, and the Plants afterward treated, as hath been directed for the 4th Sort; with this Difference only, to plant these in a warm Border and a dry Soil, otherwise the Plants will not thrive well in this Climate. The 3d Year from Seed the Plants will flower, and continue many Years in a proper Soil.

The 11th Sort grows naturally in Egypt, from whence the Seeds were sent to the Royal Garden at Paris, and Dr. Jussieu sent me Part of the Seeds: This is an annual Plant, which rises with upright Stalks a Foot and Half high, which are thinly garnished with winged Leaves, composed of about 12 Pair of oval Lobes, terminated by an odd one; the Foot Stalks of the Flowers arise from the Wings of the Leaves, and are extended beyond them; these are terminated by loose Spikes of yellow Flowers, which are succeeded by Sickle-shaped Pods. It flowers in July, and the Seeds ripen in the Autumn, soon after which the Plants decay. It may be propagated by Seeds, in the same Manner as hath been before directed for the annual Sorts, putting the Seeds in a warm Border

and a dry Soil, where the Plants will perfect their Seeds very well.

The 12th Sort grows naturally in Italy, and the South of France, from whence I received the Seeds. This is an annual Plant, which sends out several weak Stalks without any Order, which are garnished by winged Leaves, composed of 10 or 12 Pair of Lobes, and sometimes terminated by an odd one; these are hairy, at the Foot Stalks of the Leaves the Flowers come out, in small Clusters, sitting close to the Sides of the Stalks, which are of a Copper Colour, and succeeded, by Awl-shaped pointed Pods growing erect, and reflected at their Points. This is propagated by Seeds, as the other annual Sorts before mentioned; it flowers in July, and the Seeds are ripe in Autumn.

The 13th Sort was discovered by Dr. Tournefort, in the Levant, who sent the Seeds to the Royal Garden at Paris, where they succeeded, and produced new Seeds, so that all the European Gardens have been since supplied with it; this hath a perennial Root, which sends out many upright Stalks upward of 5 Feet high, which are garnished with winged Leaves, composed of about 14 Pair of oval Lobes, terminated by an odd one; from the Wings of the Leaves the Foot Stalks of the Flowers arise, which are garnished with small yellow Flowers, growing in loose Spikes, and are extended beyond the Leaves; these are succeeded by very short triangular Pods, ending in a Point, which open in two Cells, filled with Ash coloured square Seeds. This flowers in June and July, and the Seeds ripen in Autumn. It is propagated by Seeds, which may be sown in the Spring, upon a Border of light Earth, and treated as the 4th Sort, till the following Autumn, when the Plants should be removed to an open Situation, and a dry Soil, and when they have taken root, will require no farther Culture. I have a Root of this Sort growing in the Chelsea Garden, which is more than thirty Years old, and produces Plenty of Seeds every Year.

The 14th Sort grows naturally upon the Mountains in Germany; this never rises with a Stalk, but sends out diverse winged Leaves from the Root, which are composed of many blunt Lobes, placed by Pairs, and terminated by an odd one; the Foot Stalks of the Flowers arise immediately from the Root, and are longer than the Leaves, being terminated by Spikes of blue Flowers, which are succeeded by swelling Awl-shaped Pods, erect and hairy, having two Cells filled with greenish Seeds. It flowers in July, and the Seeds ripen in Autumn. The Root is Perennial, and the Plant is propagated by Seeds as the 4th Sort, but should have an open Situation.

The 15th Sort grows naturally in Carolina; this hath a perennial Root, but an annual Stalk, which decays in Autumn; from the Root arise several upright Stalks 3 Feet high, which are garnished with winged Leaves, composed of 18 or 20 Pair of oval smooth Lobes, and terminated by an odd one; from the Wings of the Leaves arise the Foot Stalks, which are terminated by Spikes of greenish yellow Flowers, succeeded by oval cylindrical Pods, to which adheres the Style, which extends beyond the Pods in a Point. This flowers in August, but unless the Season is warm, seldom ripen their Seeds in England. It is propagated by Seeds, which should be sown upon a moderate hot Bed in the Spring, and when the Plants are fit

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fit to remove, they should be each planted in a small Pot filled with Earth from the Kitchen Garden, and plunged again into the hot Bed, to forward their making new Roots; when they are established in the Pots, they must be inured to the open Air, and the End of May placed in a sheltered Situation, where they may remain till October, when they should be placed under a common Frame to shelter them in Winter; in Spring they may be turned out of the Pots, and planted in a warm Border, where they will thrive and flower; if the Winter proves very severe, a little old Tan should be laid over the Roots, which will effectually preserve them.

The 16th Sort grows in most Parts of North America; this hath a perennial Root, which sends out many irregular Stalks about 2 Feet long, which are garnished with winged Leaves, composed of many Pair of oval Lobes, which are hairy on their under Side; from the Wings of the Leaves come out the Foot Stalks, supporting Spikes of greenish yellow Flowers, which are succeeded by cylindrical Pods, ending in a Point. This flowers in July, and the Seeds ripen the Beginning of October. It is propagated by Seeds, managed as those of the 15th Sort, but the Plants are hardier, so will live through the Winter in a common Bed of light Earth without Covering.

The 17th Sort rises with upright Stalks 2 Feet high, hairy, and garnished with winged Leaves, composed of many Pair of oval woolly Lobes, and terminated by an odd one; from the Wings of the Leaves arise the Foot Stalks, which are terminated by close Spikes of yellow Flowers; these are succeeded by hairy Awl-shaped Pods, having two Cells, filled with brown Seeds. This flowers in June, and the Seeds ripen in Autumn: It grows naturally in Siberia, from whence the Seeds were sent to Dr. Amman, at Petersburg, who communicated them to me. It is a perennial Plant, and propagated by Seeds, in the same Manner as the 4th Sort.

The 18th Sort is a biennial Plant: The Seeds were sent me from Spain, where the Plant grows naturally. This sends out many trailing Stalks, divided into smaller Branches, which are garnished with many Pair of narrow Lobes, terminated by an odd one; the Flowers are collected into Heads, which terminate the Foot Stalks, and are white; the Foot Stalks are about the same Length as the Leaves; the Pods are short and triangular, and the whole Plant is covered with a silvery Down. The Seeds of this should be sown upon an open Bed of light Earth, where the Plants are to remain, and the Plants afterward treated as before directed for the annual Sorts; the 2d Year they will flower, and perfect their Seeds.

The 19th Sort grows upon the Hills near Verona, from whence I received it. This sends up an upright Stalk, seldom more than six Inches high, garnished with small winged hoary Leaves; the Foot Stalks arise from the Wings of the Leaves, supporting three or four pale Flowers, which are succeeded by Sickle-shaped hoary Pods. This is a biennial Plant, and should be treated in the same Manner as the last.

The 20th Sort was discovered by Dr. Tournefort in the Levant, who sent the Seeds to the Royal Garden at Paris. This hath a perennial Root, which sends up several erect Stalks, garnished with winged Leaves, composed of several Pair of Lobes, which are indented at the Top; From the Wings of the Leaves come out long

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Foot Stalks, supporting a globular Head of purple Flowers; these are rarely succeeded by Pods in England. It flowers the End of July. It is propagated by Seeds, which should be sown upon a moderate hot Bed in the Spring, and the Plants treated as the 15th Sort.

ASTRANTIA. Masterwort.

The Characters are,

It is a Plant whose Flowers grow in an Umbel; the general Umbel is composed of 4 or 5 small ones. The Involucrum of the general Umbel is in 1 Species composed of 2 large trifid Leaves, and 2 entire; in another Species of several small Leaves: The Involucrum of the small Umbels is composed of many small pointed Leaves, which are longer than the Umbels, are coloured and spread open. The Empalement of the Flower is permanent, erect, and cut into 5 short acute Segments; the Flower is composed of 5 Petals, which are erect, bifid, and bend inward: It hath 5 Stamina the Length of the Petals, crowned by single Summits; the oblong Germen is situated below the Receptacle, supporting 2 slender Styles, crowned by spreading Stigma; the Germen afterward becomes an oval blunt channeled Fruit, divided into 2 Parts, having 2 oblong oval Seeds inclosed in the Cover.

The Species are,

1. *ASTRANTIA foliis radicalibus quinquelobatis serratis, caulinis trilobatis acutis.* Masterwort with the lower Leaves divided into 5 Lobes, which are sawed, and those on the Stalks cut into 3 acute Lobes. Greatest Masterwort with a purplish Involucrum.

2. *ASTRANTIA foliis quinquelobatis lobis tripartitis, Haller. Helv. 439.* Masterwort with Leaves having 5 tripartite Lobes. Greater Masterwort with a white Involucrum.

3. *ASTRANTIA foliis digitatis serratis. Lin. Sp. Plant. 255.* Masterwort with fingered Leaves, which are sawed. Smaller black Hellebore with a Sanicle Leaf.

The 1st Sort hath many spreading Leaves rising from the Root, which are composed of 5 large Lobes, sawed pretty deep on their Edges; from between these the Stalks arise near 2 Feet high, having at each Joint one Leaf deeply cut into 3 sharp pointed Lobes; at the Top of the Stalk is produced the Umbel of Flowers, at the Bottom of which is situated the general Involucrum, composed of 2 long trifid Leaves, and 2 entire ones of the same Length. The small Umbels stand upon long Foot Stalks or Rays; under which is placed the Involucrum, composed of many Spear-shaped pointed Leaves, which extend beyond the Rays, and are of a purplish Colour.

The 2d Sort hath much the Appearance of the 1st, so has been supposed to be only a Variety of it, but it differs from that in having 5 Lobes to the Leaves of the Stalks, which are much shorter, and rounder at the Point, than those of the other. The general Involucrum of the Umbel is composed of short narrow Leaves, and those of the smaller Umbels are shorter and white.

The 3d Sort seldom rises a Foot high; the Foot Stalks of the Leaves are 4 Inches long; the Leaves are divided into 8 Segments to the Bottom, and spread out like a Hand; these are deeply sawed on their Edges, the Involucrum of the general Umbel is composed of several very narrow Leaves; the Foot Stalks of the separate Umbels are very long and slender, and toward the Top do often divide into 3, each having a small Umbel. The Involucrums of these small Umbels are short and white.

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These Plants are very hardy; they may be propagated either by sowing their Seeds, or parting their Roots. If propagated from Seeds, they should be sown in Autumn, soon after they are ripe, on a shady Border; when the Plants come up, they should be carefully weeded; and where too close, some of them should be drawn out, to allow Room for others to grow, until *Michaelmas*, when they should be transplanted where they are to remain; which should always be in a moist Soil, and a shady Situation. The Distance these Plants should be placed, is 3 Feet, for their Roots will spread to a considerable Width, if they are permitted to remain long in the same Place. They require no other Culture but to keep them clear from Weeds, and every 3d or 4th Year to be taken up at *Michaelmas*, and their Roots parted and planted again. These Plants are seldom preserved but in Botanic Gardens, there being no great Beauty in their Flowers. They all grow naturally upon the *Alps*.

ATHAMANTA. *Lin. Meum. Tourn.* Spiguel.

The Characters are,

It is a Plant with an umbellated Flower; the general Umbel spreads open, and is composed of many small ones; the Involucrum of the great Umbel is composed of many narrow Leaves, which are shorter than the Rays; those of the small ones are narrow, and equal with the Rays: The Flowers of the great Umbel are uniform; those of the smaller have 5 inflexed Heart-shaped Petals, which are a little unequal, each Flower hath 5 slender Stamina, which are of the same Length with the Petals, and crowned by roundish Summits; the Germen is situated below the Receptacle, supporting 2 reflexed Styles, crowned by obtuse Stigma; the Germen afterward becomes an oblong channeled Fruit, divided into 2 Parts, each containing one oval channeled Seed.

The Species are,

1. ATHAMANTA foliolis capillaribus, seminibus glabris striatis. *Hort. Cliff.* 93. Spiguel with Hair-like Leaves, and smooth channeled Seeds. Spiguel with Dill Leaves.

2. ATHAMANTA foliolis linearibus planis hirsutis, petalis bipartitis, seminibus oblongis hirsutis. *Lin. Mat. Med.* 143. Spiguel with plain hairy Leaves, Petals divided into 2 Parts, and oblong hairy Seeds. *Daucus creticus.* C. B. P. Candy Carrot with very slender Fennel Leaves.

3. ATHAMANTA foliis inferioribus nitidis, umbellis primordialibus subsessilibus, seminibus pilosis. *Hort. Upsal.* 60. Spiguel with shining under Leaves, the Umbels at first sitting close, and hairy Seeds. *Daucus secundus Siculus.* Zan. Hist. The 2d Sicilian Carrot with a Flixweed Leaf.

The 1st Sort is the common Spiguel used in Medicine. This grows naturally in *Westmoreland*, and by the Inhabitants there is called Bald-Money, or Bawd-Money; by some it is called *Meu*. This is a perennial Plant, the Stalks rise a Foot and a Half high, and are channeled; the Leaves are very ramose, and composed of many fine Hair-like Leaves, set pretty close, of a deep Green; the Stalk is terminated by an Umbel of white Flowers, which are succeeded by oblong smooth Seeds.

This may be propagated by parting the Roots at *Michaelmas*, or from Seeds sown soon after they are ripe; the Plants should have a shady Situation and moist Soil. It flowers in *June*, and the Seeds ripen in *August*.

The 2d Sort is the *Daucus Creticus*, of which there are two Sorts, whose Seeds are indifferently used in the Shops, one of which is annual, but that here mentioned

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is a perennial Plant, which sends out many Leaves, composed of Numbers of slender narrow Leaves like those of Fennel, irregularly disposed. The Flower Stalk rises about two Feet high, sending out many Branches, which are garnished their whole Length, with the same compound capillary Leaves, and at the Top are terminated by compound Umbels, composed of near twenty small ones, which spread out every Way, these have white Flowers with five Petals, which are succeeded by oblong, hairy, channeled Fruit, divided into two Parts, containing one oblong hairy Seed.

This Sort is propagated by Seeds sown in Autumn on an open Bed of light dry Ground; when the Plants come up in Spring, they should be kept clear from Weeds, and thinned where they are too close, so that they may have Room to grow till the following Autumn, when they should be carefully taken up, and planted at about a Foot Distance in a Bed of light sandy Earth, where the Roots will continue several Years, and annually flower, and produce ripe Seeds. It flowers in *June*, and the Seeds ripen in *September*. This grows naturally in *Candia*, but is rarely injured by Cold in this Country.

The 3d Sort is a perennial Plant; this sends up from the Root several upright Stalks, near three Feet high, which are terminated by compound Umbels, these, at their first Appearance, are very close and compact, but afterward spread open, and divide into several smaller Umbels, the Foot Stalks or Rays of these are short and hairy. The Flowers are composed of five white Petals, which are not quite equal, and are succeeded by oblong woolly Fruit, divided into two Parts, each containing one oblong channeled Seed.

This may be propagated as the former, and is equally hardy; it grows naturally in *Sicily*, and in *Italy*.

ATRACTYLIS. *Lin. Gen. Pl.* 837. Distaff Thistle.

The Characters are,

It hath a radiated, compound Flower, composed of many hermaphrodite Florets, included in a common scaly Empalement, without Spines. This hath a permanent Involucrum, composed of several narrow plain Leaves with sharp Spines on their Sides. The hermaphrodite Florets which compose the Rays, or Border, are stretched out on one Side like a Tongue, slightly indented in five Parts. Those which compose the Disk, or Middle, are Funnel-shaped, and cut at the Top into five Parts; these have both five slender Stamina in each, which are short, and crowned by cylindrical Summits; in those of the Disk is situated a short crowned Germen, supporting a slender Style, crowned by a bifid Stigma. The Germen becomes a turbinated compressed Seed, crowned with a Plume of Down, shut up in the Empalement.

The Species are,

1. ATRACTYLIS involucris cancellatis ventricosis, linearibus dentatis calycibus ovatis, floribus flosculosis. *Lin. Sp. P.* Distaff Thistle with a bellied netted Involucrum, an oval indented linear Empalement, and flosculous Flowers. This is the *Cnicus exiguus*, &c. *Tourn. Inst.* Small *Cnicus* with a netted Head, and woolly Seed.

2. ATRACTYLIS foliis dentato-sinuatis, flore radiato obvallato involucri patente, caule herbaceo. *L. Sp. Plant.* 829. Distaff Thistle with sinuated indented Leaves, a radiated Flower strongly guarded by its spreading Involucrum, and an herbaceous Stalk. Lower purple prickly *Cnicus*.

3. ATRACTYLIS flore acaule. *Lin. Sp. Plant.* 829. Distaff

Distaff Thistle with a Flower without a Stalk.

4. *ATRACYLIS foliis oblongo-ovatis denticulatis spinosis calycibus patentibus caule fruticoso.* Hort. Cliff. 295. Distaff Thistle with oblong oval, indented, prickly Leaves, a spreading Empalement, and a shrubby Stalk. This is the *Carthamus Africanus*. Boerb. Shrubby African Bastard Saffron with an Ilex Leaf, and a golden Flower.

The 1st Sort grows naturally in Spain, Sicily, and other warm Parts of Europe. This is an annual Plant which seldom rises more than eight or nine Inches high, with a slender Stem, thinly garnished with narrow hoary Leaves, having Spines on their Edges; at the Top of the Stalk there are two or three slender Branches sent out, each being terminated by a Head of Flowers, like those of the Thistle, with an involucre composed of several narrow Leaves, armed with Spines on their Side, and are longer than the Head of Flowers. The Empalement is curiously netted over, and is narrow at the Top, but swelling below, containing many Florets of a purplish Colour. These are each succeeded by a single downy Seed; it flowers in July, and, if the Season is warm and dry, it will ripen its Seeds in September, but in cold Years never perfects Seeds here.

It is propagated by Seeds sown upon an open Bed of light Earth, where the Plants are to remain, and will require no other Care but to keep them clean from Weeds, and thin the Plants where they rise too close.

The 2d Sort rises with a Stalk near a Foot high, which is garnished with indented Leaves, having small Spines on their Edges; the upper Part of the Stalk is divided into two or three slender Branches, each supporting a Head of purple Flowers, having Rays inclosed in a scaly Empalement. The Roots of this will live two or three Years; it flowers in June, but unless the Summer is warm and dry, it will not perfect Seeds in England. The Seeds should be sown where they are to remain, and will require no other Culture than the former. It grows naturally about Madrid, from whence I received the Seeds.

The 3d Sort grows naturally in Italy, and the Archipelago; the College of Physicians have placed this among the medicinal Simples, by the Title of Carline Thistle; the Root is perennial, and sends out many narrow Leaves, which are deeply sinuated, and armed with Spines on their Edges. These lie close on the Ground, and between them the Flower is situated, without Stalk, having many Florets, inclosed in a prickly Empalement. Those on the Border are white; but those which compose the Disk are of a yellowish Colour. It flowers in July, but never perfects Seeds in England.

It is propagated by Seeds obtained from the Countries where it grows naturally; these should be sown upon a Border of light Earth, in a warm Situation, early in April, and when the Plants come up, and are fit to transplant, they should be thinned, and those which are drawn out, may be transplanted, leaving the others two Feet asunder, after which the only Culture they require is to keep them clean from Weeds in Summer, and in Winter to cover the Roots with some old Tanners Bark, to prevent the Frost from penetrating the Ground.

The 4th Sort grows naturally at the Cape of Good Hope; this rises with a shrubby Stalk, near three Feet high, garnished with oblong Leaves, indented on their Edges, which have weak Spines at each Indenture; there

are several weak Branches sent out on the Sides, each of which are terminated by a single Head of Flowers, inclosed in a common Empalement which spreads open, and are of a golden Colour, but are never succeeded by Seeds in England. This is propagated by Slips, or Heads, taken from the Flower Stalks in June, and planted in Pots filled with light Earth, and plunged into an old Bed of Tanners Bark, where the Heat is gone, and shaded with Mats in the Heat of the Day, until they have taken Root, after which Time they may be exposed in the open Air till October, when they must be removed into Shelter, and, during the Winter, should have little Water, and in Summer should be exposed with other hardy exotic Plants in a sheltered Situation.

ATRAPHAXIS. Lin. Gen. Plant. 405. We have no English Name for this.

The Characters are,

The Flower hath a permanent Empalement, composed of two small Leaves placed opposite, which are coloured. The Flower hath two roundish sinuated Petals larger than the Empalement, which are permanent; it hath six capillary Stamina, which are the Length of the Empalement, crowned with roundish Summits; in the Center is situated a compressed Germen, having no Style, but crowned by two Stigma, the Germen afterward becomes a roundish compressed Seed shut up in the Empalement.

The Species are,

1. *ATRAPHAXIS ramis spinosis.* Hort. Cliff. 138. *Attrapaxis* with prickly Branches.

2. *ATRAPHAXIS inermis.* Lin. Sp. Plant. 333. *Atrophaxis* without Spines. *Arbuscula Africana.* H. E. 36. African creeping Shrub, with Leaves curled on their Sides.

The 1st Sort grows naturally in Media, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris, with the Title of *Atriplex orientalis*.

This is a Shrub which rises four or five Feet high, sending out many weak lateral Branches, which are armed with Spines; these are garnished with small Spear-shaped Leaves of an Ash Colour, which are smooth. The Flowers come out at the Ends of the Shoots in Clusters, which consist of two white Leaves tinged with purple; and are included in a two leaved Empalement of a white herbaceous Colour; these appear in August, but the Seeds never ripen here, so the Plant is propagated by Cuttings, and must be screened from hard Frost, which commonly destroys those which are planted in the open Air.

The 2d Sort sends out many slender Branches which trail on the Ground if not supported, these are garnished with small oval Leaves, about the Size of those of the Knot Grass, but waved and curled on their Edges, embracing the Stalk half round at their Base, and placed alternate. The Flowers come out from the Wings of the Leaves, and have much the Appearance of an apetalous Flower, being composed of four herbaceous Leaves, two of which are the Empalement, the other two the Petals; in the Center is situated the compressed Germen, attended by six Stamina, but the Seeds are never produced in this Country. It flowers in June and July. This is a Native of the Country about the Cape of Good Hope, but has been several Years in the English Gardens, where it is allowed a Place more for the Sake of Variety than its Beauty. It may be easily propagated

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by Cuttings in Summer, and in Winter the Plants must be screened from Frost.

ATRIPLEX, Orach, or Arach.

The Characters are,

It hath female and hermaphrodite Flowers on the same Plant. The hermaphrodite Flowers have a permanent Empalement of five Leaves, which are oval, concave and have membranaceous Borders; they have no Petals, but five Awl-shaped Stamina, placed opposite to the Leaves of the Empalement, supporting double Summits. In the Center is placed the orbicular Germen, with a short bipartite Style, crowned with a reflexed Stigma. The Germen becomes an orbicular compressed Seed, shut up in the five cornered Empalement. The female Flowers have a two leaved Empalement, which are large, plain, erect, and pointed. They have no Petals nor Stamina, but in the Center a compressed Germen, supporting a bipartite Style, crowned by a reflexed Stigma. The Germen becomes an orbicular compressed Seed, inclosed in the Heart-shaped Valves of the Empalement.

The Species are,

1. ATRIPLEX caule erecto herbaceo foliis triangularibus. Hort. Cliff. 469. Orach with an upright herbaceous Stalk, and triangular Leaves. Pale green, or white Garden Orach.

2. ATRIPLEX caule fruticoso foliis deltoidibus integris. Hort. Cliff. 469. Orach with a shrubby Stalk, and entire Leaves, shaped like the Greek Delta. Broad-leaved Orach, or shrubby Halimus, commonly called Sea Purslane Tree.

3. ATRIPLEX caule fruticoso foliis obovatis. Flor. Suec. 829. Orach with a shrubby Stalk and oval Leaves. Shrubby Sea Orach, or Halimus, called Sea Purslane with a narrow Leaf.

There are several other Species of this Genus, some of which grow naturally in England, but as they are Plants of no Beauty, they are rarely admitted into Gardens, for which Reason I shall not enumerate them here.

The 1st of these Plants was formerly cultivated in the Kitchen Gardens, as a culinary Herb, being used as Spinage, and is now by some Persons preferred to it; though, in general it is not esteemed amongst the English; but the French cultivate it for Use.

There are three or four Sorts of this, whose Difference is only in the Colour of the Plants; one is of a deep green, another of a dark purple, and a third with green Leaves and purple Borders. These are supposed to be only accidental Varieties from the same Seeds, but in thirty Years cultivation of these Sorts, I have never yet observed them to vary. But as there is no other essential Difference I have not enumerated them.

These Plants are annual, so must be sown for Use early in the Spring, or at Michaelmas, soon after the Seeds are ripe; at which Time it generally succeeds best, and will be fit for Use at least a Month earlier. These Plants require no other Culture, but to hoe them when they are about an Inch high; leaving them about four Inches asunder; and to destroy the Weeds. This must be done in dry Weather, otherwise the Weeds will take Root again, and render your Work of no Use. When your Plants are grown about four Inches high, it will be proper to hoe them a second time, in order to clear them from Weeds; and, if you observe the Plants are left too close in any Part, you must then cut them out. If this

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be well performed, and in dry Weather, the Ground will remain clean until the Plant is fit for Use. Where these Plants are sown on a rich Soil, and allowed a good Distance, the Leaves will be very large, in which the Goodness of the Herb consists. This must be eaten while young; for, when the Stalks become tough, it is good for nothing. Some few Plants of each Kind may be permitted to stand for Seed, to preserve their Kinds, which will ripen in August, and may then be cut, and laid on a Cloth to dry; after which the Seeds may be beaten out, and put up for Use. The 1st Sort is ordered by the College of Physicians for medicinal Use.

The 2d Sort was formerly cultivated in Gardens as a Shrub; and, by some Persons, they were formed into Hedges, and constantly sheared to keep them thick; but this Plant is by no Means fit for such Purposes, on many Accounts, for it grows too vigorous; the Shoots, in one Month, at the growing Season of the Year, will be two Feet long, provided they have a good Soil; so that a Hedge of this Plant cannot be kept in tolerable Order, nor will it ever form a thick Hedge. But a worse Inconvenience attends this Plant; for, in very hard Winters, it is often destroyed; as also, in very dry Summers, many of the Plants will decay, whereby there will become large Gaps in the Hedge.

But if this Plant is not proper for Hedges yet it may have a Place in Wilderness Quarters, where it will serve to thicken; and the silver-coloured Leaves will add to the Variety, among other Shrubs of the same Growth. This will grow eight or ten Feet high, and, if suffered to grow wild, without pruning, will spread several Feet in Compass, and will sometimes produce Flowers.

It may be propagated by Cuttings, planted in any of the Summer Months on a shady Border, where, if they are duly watered, they will soon take Root, and be fit to transplant at Michaelmas, where they are to remain; for they do not succeed well in transplanting, especially when they are grown pretty large and woody.

The 3d Sort grows wild in divers Parts of England, on the Sea Side, from whence the Plants may be procured; or it may be propagated by Cuttings, as the former Sort. This is a low under Shrub seldom rising above two Feet and a half but becomes very bushy. The Leaves of this Kind are narrow, and of a whitish Colour; but are not so white as those of the former. This may have a Place amongst other low Shrubs; and, if planted on a poor gravelly Soil, will abide several Years, and make a pretty Diversity.

ATROPA. Lin. Gen. Plant. 222. Belladonna. Tourn. Inst. R. H. 77. Deadly Nightshade.

The Characters are,

The Flower hath a Permanent Empalement of one Leaf, cut into five Parts, it is Bell-shaped, the Tube is short, and swells towards the Brim, where it spreads open, and is divided into five equal Parts. It hath five Awl-shaped Stamina rising from the Base of the Petal where they join, but at the Top spread from each other, and are crowned with large Summits which stand upward. In the Center is situated an oval Germen supporting a slender Style, which is crowned by an oblong transverse Stigma. The Germen afterward becomes a globular Berry having three Cells, sitting on the Empalement, and filled with Kidney-shaped Seeds.

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The Species are,

1. *ATROPA caule herbaceo, foliis ovatis integris.* Lin. Sp. Plant. 181. Deadly Nightshade with an herbaceous Stalk, and oval entire Leaves. This is the *Belladonna majoribus foliis & floribus.* Tourn. Deadly Nightshade, with larger Leaves and Flowers. And the *Solanum lethale.* Clus. Hist. 2. 86. Common Deadly Nightshade.

2. *ATROPA caule fruticoso.* Lin. Sp. Plant. 182. Deadly Nightshade with a shrubby Stalk. This is the *Belladonna frutescens rotundifolia Hispanica.* Tourn. Inst. R. H. 77. Spanish shrubby *Belladonna* with a round Leaf.

3. *BELLADONNA caule herbaceo, foliis ovatis nervosis marginibus undulatis.* Nightshade with an herbaceous Stalk, and oval veined Leaves waved on their Edges.

The 1st Sort grows wild in many Parts of England. I have observed it in Woodstock Park in Oxfordshire, and in great Abundance in Uppark in Hampshire. This Plant hath a perennial Root, which sends out strong herbaceous Stalks of a purplish Colour, which rise to the Height of 4 or 5 Feet, and are garnished with oblong entire Leaves, which toward Autumn change to a purplish Colour; the Flowers come out between the Leaves singly, upon long Foot Stalks; these are large, Bell-shaped, and of a dusky brown Colour on their Outside, but are purple within. After the Flower is past, the Germen turns to a large round Berry, a little flated at the Top, and is first green, but when ripe turns to a shining black, sitting close upon the Empalement, and contains a purple Juice of a nauseous sweet Taste, and full of small Kidney-shaped Seeds. In some Places this Plant is called *Dwale*, but in general *Deadly Nightshade*, from its Quality. It is rarely admitted into Gardens, nor indeed should it be suffered to grow in any Places where Children resort, for it is a strong Poison; and there have been several Instances within a few Years past, of its deadly Quality, several Children being killed with eating the Berries, which are of a fine black Colour, and about the Size of a black Cherry, and not unpleasant to the Taste.

Mr. Ray gives an Account of the various Symptoms it produces, by what happened to a Mendicant Frier, upon his drinking a Glass of Mallow Wine, in which this Plant was infused: In a short Time he became delirious, soon after was seized with a grinning Laughter, after that several irregular Motions, and at last a real Madness succeeded, and such a Stupidity as those that are fottishly drunk have, which after all, was cured by a Draught of Vinegar.

Buchanan, in his History of Scotland, gives an Account of the Destruction of the Army of Sweno, when he invaded Scotland, by mixing a Quantity of the Juice of these Berries with the Drink which the Scots by their Truce were to supply them with; which so intoxicated the Danes, that the Scots fell upon them in their Sleep, and killed the greatest Part of them, so that there were scarcely Men enough left to carry off their King.

The 2d rises with a shrubby Stem, to the Height of 6 or 8 Feet, and divides into many Branches garnished with round Leaves, in Shape like those of the Storax Tree; these are placed alternately on the Branches. The Flowers come out between the Leaves upon short Foot Stalks, shaped like those of the former, but are much less, of a dirty yellowish Colour, with a few brown Stripes; these

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are never succeeded by Berries in England. It grows naturally in Spain, from whence the Seeds may be procured. It is propagated by Seeds, which should be sown in the Spring upon a very moderate hot Bed, just to bring up the Plants; when they are fit to remove, they should be each put into a separate small Pot, filled with loamy Earth, and shaded until they take Root; then they may be placed with other hardy exoticks in a sheltered Situation, and in October they must be removed into the Green-house. It flowers in July and August.

The Seeds of the 3d Sort were sent me from Campeachy; this hath a perennial Root, which puts out several channeled herbaceous Stalks, which rise about 2 Feet high, and toward the Top divide into 2 or 3 small Branches; these are garnished with oval Leaves 4 Inches long and 3 broad, which have several transverse Ribs on their under Side, which are prominent. The Flowers come out from between the Leaves on short Foot Stalks, which are white, and shaped like those of the common Sort, but are smaller. It flowers in July and August, but seldom ripens its Fruit in England. It is propagated by parting the Roots in Spring, and the Plants must be kept in the Bark Stove to have them thrive well in this Country.

AVENA. Lin. Gen. P. 85. Tourn. Inst. Oats.

The Characters are,

It is distinguished from other Corn, by the Grain growing in loose Panicles.

AVENA calycibus dispermibus seminibus levis. Hort. Cliff. 25. Oats with 2 smooth Seeds in each Empalement. There are 3 Sorts of these Oats cultivated in England, viz. the white, the black, and the brown or red Oat, which are supposed to be only accidental Varieties; but where they have been many Years separately cultivated, I have never observed them to alter. However, as their principal Difference is in the Colour of their Grain, I shall not enumerate them as distinct Species. There is also a naked Oat, which is sometimes cultivated in the distant Parts of England, but is rarely seen near London.

The white Sort is the most common about London; the black is more cultivated in the Northern Parts of England, and is esteemed a very hearty Food for Horses; but the first makes the whitest Meal, and is cultivated where the Inhabitants live much upon Oat Cakes.

The naked Oat is less common than either of the others, in the Southern Parts of England; but in the North of England, Scotland, and Wales, it is cultivated in Plenty. This Sort is esteemed, because the Grain threshes clean out of the Husk, and need not be carried to the Mill to be made into Oatmeal or Grift. An Acre of Ground doth not yield so many Bushels of these, as of the common Oats, the Grain being small and naked, and goes near in Measure; but what is wanting in the Measure, is supplied in Value.

The red Oats are much cultivated in Derbyshire, Staffordshire, and Cheshire, but are rarely seen in any of the Counties near London; though, as they are a very hardy Sort, and give a good Increase, they would be well worth propagating, especially for all strong Lands.

The Straw is of a brownish red Colour, as is also the Grain, which is very full and heavy, and esteemed better Food for Horses than either of the former Sorts.

Oats are very profitable, and absolutely necessary, being the principal Grain which Horses love; and are esteemed

esteemed the most wholesome Food for them, being sweet, and of an opening Nature; other Grains being apt to bind, which is injurious to labouring Horses: But if you feed them with this Grain soon after they are housed, before they have sweat in the Mow, or are otherwise dried, it is as bad on the other Hand, for they are then too laxative.

This Grain is a great Improvement to many Estates in the North of *England*, *Scotland*, and *Wales*; for it will thrive on cold barren Soils, which will produce no other Sort of Grain; it will also thrive on the hottest Land: In short, there is no Soil too rich or too poor for it, too hot or too cold for it; and in wet Harvests, when other Grain is spoiled, this will receive little or no Damage; the Straw and Husks being of so dry a Nature, that if they are housed wet, they will not heat in the Mow, or become mouldy; so is of great Advantage in the Northern Parts of *England*, and in *Scotland*, where their Harvest is late, and the Autumns wet.

The Meal of this Grain makes tolerable good Bread, and is the common Food of the Country People in the North. In the South it is esteemed for Pottage, and other Messes, and in some Places they make Beer of it.

The best Time for sowing Oats is in *February* or *March*, according as the Season is early or late; and sometimes I have known it sown in *April* upon cold Land, and has been early ripe. The black and red Oats may be sown a Month earlier than the white, because they are hardier.

Oats are often sown on Land which has the former Year produced Wheat, Rye, or Barley. The common Method is to plough in the Stubble about the Beginning of *February*, and sow the Oats, and harrow them in; but then they must be harrowed the same Way as the Furrows lay, for if it be done crossways, the Stubble will be raised on the Surface; but this is not a good Method of Husbandry, for when People have Time to plough the Stubble in Autumn, it will rot in Winter; and then giving the Land another Ploughing and a good Harrowing just before the Oats are sown, it will make the Ground finer and better to receive the Grain. Most People allow 4 Bushels of Oats to an Acre, but I am convinced 3 Bushels are more than enough; the usual Produce is about 25 Bushels to an Acre, though I have sometimes known more than 30 Bushels on an Acre.

Oats are also sown upon Land when it is first broken up, before the Ground is brought to a Tilt for other Grain, and is frequently sown upon the Sward with one Ploughing; but it is much better to give the Sward Time to rot before sowing, for the Roots of the Grass will prevent those of the Corn from striking downward.

AVENUES are Walks of Trees leading to a House, which are generally terminated by some distant Object.

These were formerly more the Taste than at present, there being few old Seats in the Country but have 1 or more of these Avenues; and some have as many of them as there are Views from the House; but of late these are disused; for nothing can be more absurd, than to have the Sight contracted by 2 or more Lines of Trees, which shut out the View of the adjacent Grounds, whereby the Verdure and natural Beauties of the Country are lost; and where the Avenues are of a considerable Length, they appear at each End to be only narrow Cuts through a Wood, which never can please any Person of real

Taste; and, when the Road to the House is through the Avenue, nothing can be more disagreeable; for in approaching to the House, it is like going through a narrow Lane, where the Objects on each Side are shut out from the View; and when it is viewed from the House, it at best has only the Appearance of a Road, which being extended to a Length in a strait Line, is not near so beautiful as a common Road, which is lost by the Turnings, so as seldom to be seen to a great Extent: But as these Avenues must be made exactly strait, so when the Trees are grown to any Size, they entirely break the View, whatever Way the Sight is directed through them; and if this is in a Park, the Lawn of Grass through which the Avenue is planted, is thereby entirely deprived of the Beauty which it naturally would afford, if left open and well kept: Therefore, whenever the Situation of a House will admit of a large open Lawn in Front, the Road to the House should be carried round at a proper Distance; and, if it be carried sometimes through Trees, and serpented in an easy natural Way, it will be much more beautiful than any stiff formal Avenue, how large soever made.

But as there may be some Persons so much wedded to the old Way of laying out and planting Grounds, as to prefer Avenues to the most beautiful Disposition of Lawns, Woods, &c. I shall mention the best Methods of designing and planting them:

The usual Width allowed to these Avenues was generally as much as the whole Breadth of the House; but it will be better if they are planted 12 or 14 Feet wider; because when the Trees are grown to any considerable Size, they will spread and overhang, so will contract the View.

As for Avenues to Woods or Prospects, &c. they ought not to be less than 60 Feet in Breadth; and because such Walks are a long Time before they are shady, it will be convenient to plant another Row on each Side, rather than to lose the Stateliness that the main Walk will afford in Time by being broad, where any Thing of a Prospect is to be gained.

The Rows should not be planted nearer one another than 35 or 40 Feet, especially if the Trees are of a spreading Kind; and the same Distance, if they are for a regular Grove.

The Trees proper for planting Avenues, are the *English Elm*, the *Lime Tree*, the *Horse Chestnut*, the common *Chestnut*, the *Beach*, and the *Abele*.

The *English Elm* is approved for all Places where it will succeed, which it will do in most Places, except in very wet or cold shallow Grounds; because it will bear cutting, heading, lopping in any Manner whatsoever, and probably, with better Success than any other Tree.

2dly, The *Lime Tree*; because it will do well in any Soil, if the Bottom be not hot and gravelly; and because of its regular Shape, the Agreeableness of its Shade, and the beautiful Colour of its Leaves.

3dly, The *Horse Chestnut* is also to be used in such Places as are very well defended from strong Winds; because, wherever it grows freely, if it be not skilfully managed now and then by cutting, the Branches are subject to split down. This Tree is valuable on Account of its quick Growth, the Earliness of its coming out, the Nobleness of its Leaves, and the Beauty of its Flowers, being a fine Tree both for Shade and Ornament. This delights in a strong hearty Soil, but will do well in any tolerable

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lerable Soil, if good Care be taken in the planting of it; but wherever these Trees are planted in Avenues, they should be placed 24 Feet asunder, that their Heads may have Room to spread, otherwise they will not appear so beautiful.

4thly, The common Chestnut will do well in a proper Soil, and will rise to a considerable Height, if planted close together; but if it be planted singly, where the Tree can take its own natural Shape, it is rather inclined to spread and grow globous, than tall.

5thly, The Beech is recommended by some; but this seldom succeeds well after transplanting, without extraordinary Care; though it arrives to a very large Tree in many Places in England, where it grows naturally, but is the most tedious and troublesome to raise, to any tolerable Size, in a Nursery.

6thly, The Abele: This, indeed, grows more dispersed and loose in its Head than any of the former, and consequently, is worse for Defence; but yet is not to be left out from the Number of Trees for Avenues, because it is the quickest in Growth of all the Forest Trees, and will thrive in almost any Soil, but particularly in wet Ground, where few of the before-mentioned Trees will thrive, and seldom fails in transplanting.

7thly, The Oak; but this is seldom used in planting Avenues, because it requires so long a Time to raise it up to any tolerable Stature in the Nursery Way; nor is it apt to thrive much after it has been transplanted, if at any Bigness.

As for the Alder, Ash, Platanus, and Sycamore, they are but rarely used for planting Avenues.

The old Method of planting Avenues with regular Rows of Trees, has been much disused of late Years, and a more magnificent Method of planting Avenues introduced; which is, to plant the Trees in Clumps or Platoons, making the Opening much wider than before; and place the Clumps of Trees at about 3 hundred Feet Distance from each other. In each of these Clumps they plant several Trees in an irregular Manner, but this is only to be practised where the Avenue is of a tolerable Length; for in short Walks, it will not appear so sightly as even Rows of Trees, especially where the View on each Side is contracted; but where there is Room, this Method is to be preferred; for, as a Person rides through the Avenue, the Opening between the Trees to the Turf, where the Deer are feeding, is much more agreeable than in passing between strait Rows of Trees. The Trees should be planted 30 Feet asunder in the Clumps, and a little Pitch thrown up round each Clump, with a Fence to prevent the Deer from coming to bark them.

AURANTIUM; the Orange Tree.

The Characters are,

The Empalement of the Flower is small, of one Leaf, indented in 5 Parts. The Flower hath 5 oblong spreading Petals, and many Stamina, which are frequently joined in small separate Bodies at Bottom, and are crowned by oblong Summits. In the Center is situated the round Germen, supporting a cylindrical Style, crowned by a globular Stigma. The Germen becomes a globular fleshy Fruit, compressed at both Ends, having a thick fleshy Pulp, and divided into several Cells, each containing 2 oval callous Seeds.

The Species are,

1. AURANTIUM foliis ovato-lanceolatis glabris. O-

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range Tree, with oval Spear-shaped smooth Leaves. The common Seville Orange.

2. AURANTIUM foliis lanceolatis acutis glabris. Orange Tree, with pointed Spear-shaped smooth Leaves. This is the *Aurantium Sinense*. F. Hesp. The China Orange.

3. AURANTIUM foliis lineari-lanceolatis glabris. Orange Tree, with narrow Spear-shaped smooth Leaves. *Aurantium angusto salicis folio dictum*. Boerb. Ind. alt. Orange Tree, with narrow Leaves called Willow-leaved Orange, and by some the Turkey Orange.

4. AURANTIUM foliis ovato-lanceolatis crassiss lucidis, fructu maximo. Orange Tree, with thick shining oval Spear-shaped Leaves, and a large Fruit. This is the *Aurantium fructu maximo Indiae Orientalis*. Boerb. Ind. alt. The Pumpelmoes, or Shaddock.

5. AURANTIUM pumilum foliis ovatis floribus sessilibus. Dwarf Orange Tree with oval Leaves, and Flowers growing close to the Branches. Nutmeg Orange.

There are many Varieties of this, as there is of most other Fruits, which have arisen from Culture; but those here enumerated may strictly be allowed to be distinct Species. The Varieties in the English Gardens are, 1. The yellow and white striped leaved Orange. 2. The curled leaved Orange. 3. The burned Orange. 4. The double flowering Orange. And 5. The hermaphrodite Orange.

The China Orange is not so hardy as the Seville, therefore must be treated more tenderly, placing it in Winter in the warmest Part of the Green-house, and housing it earlier in Autumn, otherwise the Fruit will all drop from the Trees. This Sort rarely produces good Fruit in England, nor are the Leaves of the Tree near so large or beautiful, as those of the Seville Orange; therefore the latter should be preferred, and only a Tree or two of the China Sort kept for Variety.

The Dwarf Orange is also tender, and the Leaves are very small, growing in Clusters; the Joints of the Branches are very near each other, and the Flowers of these grow very close together, and appear like a Nosegay, the Branches being covered with them. This Sort, when in Flower, is proper to place in a Room or Gallery, to adorn them; the Flowers being very sweet, will perfume the Air of the Place; but these are seldom to be found in good Health, because they must be treated with more Care than the common Orange and Lemon Trees; as must also the Shaddock, otherwise the Fruit will always drop off in Winter. The Pumpelmoes was brought from the East-Indies by one Capt. Shaddock, from whom the Inhabitants of the West-Indies gave this Fruit the Name. But the Fruit has greatly degenerated since it has been in the West-Indies, by raising the Trees from Seeds; the greatest Part of which produce harsh sour Fruit, greatly inferior to the original Sort, the Flesh or Pulp of which is red, whereas the greater Part of the Trees in America produce Fruit with a pale yellow Flesh: If they would bud from the good Sort, they might have it in as great Plenty as they pleased; but there are few Persons in that Part of the World, who understand the Method of grafting or budding Fruit Trees; and if they did, they are so negligent of their Fruits, &c. as seldom to give themselves any farther Trouble, than to put the Seeds into the Ground, and leave them to grow as Nature shall incline.

In Proof of what I have here said, I cannot omit to mention,

mention, that a few Years ago, I sent two small Trees of the true *Seville Orange* to *Jamaica*, where this Sort was wanting; and from these many other Trees were budded, which have produced Plenty of Fruit, some of which were sent to *England* last Year; and although they were long in their Passage, yet they were greatly superior to any of the same Kinds which are imported from *Spain* or *Portugal*; one of those affording three Times the Quantity of Juice, that a Fruit of equal Size from either of those Countries does.

All the Sorts of Orange Trees with striped Leaves are tender, therefore must be placed in a warm Part of the Green-house in Winter, and must be treated with more Care than the common Sort, otherwise they will not thrive. These are varieties which some Persons are fond of, but they never produce good Fruit, nor are the Flowers produced in so great Plenty, therefore a few only should be preserved for the Sake of Variety.

The horned Orange differs from the other Sorts, in the Fruit dividing into Parts, and the Rind expanding in Form of Horns: This and the distorted Orange, are preserved by some curious Persons for Variety, but they are not so beautiful as the common Orange. There is also a great Variety of sweet Oranges both in the *East* and *West-Indies*, some of which are much more esteemed than those we now have in *Europe*; but as they are much tenderer, they will not thrive in this Country with the common Culture; therefore I shall not enumerate them, but shall proceed to give Directions for the Management of Orange Trees in *England*.

If you purpose to raise Stocks for budding of Oranges, you should procure some Citron Seeds which were duly ripened; for the Stocks of this Kind are preferable to any other, both for Quickness of Growth, as also that they will take Buds of either Orange, Lemon, or Citron; next to these are the *Seville Orange* Seeds. The best Seeds are usually to be had from rotten Fruits, which are easy to be procured in Spring; then prepare a good hot Bed, of either Horse Dung or Tanners Bark; the last of which is much the better, if you can easily procure it. When this Bed is in a moderate Temper for Heat, you must sow your Seeds in Pots of good rich Earth, and plunge them into the hot Bed; observing to give them Water frequently, and raise the Glasses in the great Heat of the Day, to give proper Air, lest the Seeds should suffer by too great Heat: In 3 Weeks Time your Seeds will come up, and if the young Plants are not stunted, either for Want of proper Heat or Moisture, they will be in a Month's Time after their Appearance, fit to transplant into single Pots: You must therefore renew your hot Bed, and having prepared a Quantity of small Half-penny Pots (which are about 5 Inches over at the Top), fill these half full of good fresh Earth, mixed with very rotten Cow Dung; and then shake out the young Plants from the large Pots, with all the Earth about them, that you may the better separate the Plants without tearing their Roots; and having half filled the Pots with Earth, put a single Plant into each of the small Pots; then fill them up with the same Earth as before directed, plunging the Pots into the new hot Bed, giving them a good Watering to fix the Earth to their Roots, and observe to repeat the same very often (for this Plant, when in a hot Bed, requires much Water); but be sure to screen them

from the Sun in the Heat of the Day. In this Method, with due Care, your Plants will grow to be 2 Feet high by *July*, when you must begin to harden them by Degrees, in raising your Glasses very high, and when the Weather is good, take them quite off; but do not expose them to the open Sun in the Heat of the Day, but rather take off the Glasses, and shade the Plants with Mats, which may be taken off when the Sun declines; for the violent Heat in the Middle of the Day would be very injurious to them while young. Toward the End of *September* you must house them, observing to place them near the Windows of the Green-house, to prevent the Damps from moulding their tender Shoots. During the Winter Season they may be often refreshed with Water, and in *March* or *April*, wash their Heads and Stems, to clear them from the Filth that may have settled thereon, during their being in the House; and you must also give them a gentle hot Bed in the Spring, which will greatly forward them; but harden them by the Beginning of *June*, that they may be in right Order to bud in *August*; when you should make Choice of Cuttings from Trees that are healthy and fruitful, of whatever Kinds you please, observing that the Shoots are round; the Buds of these being much better and easier to part from the Wood, than such as are flat. When you have budded the Stocks, you should remove them into a Green-house, to defend them from Wet, turning the Buds from the Sun; but let them have as much free Air as possible, and refresh them often with Water. In a Month's Time after budding, you will see which of them has taken; you must then untie them, that the binding may not pinch the Buds, and let them remain in the Green-house all the Winter; then in the Spring, prepare a moderate hot Bed of Tanners Bark; and, after having cut off the Stocks about 3 Inches above the Buds, plunge their Pots into the hot Bed, observing to give them Air and Water, as the Heat of the Weather shall require; but be sure to screen them from the Violence of the Sun during the Heat of the Day. In this Management, if your Buds shoot kindly, they will grow to the Height of 2 Feet or more, by *July*; at which Time you must begin to harden them before the cold Weather comes on, that they may the better stand in the Green-house the following Winter. The 1st Winter after their Shooting, you must keep them very warm; for, by forcing them in the Bark Bed, they will be somewhat tender; but it is very necessary to raise them to their Height in one Season, that their Stems may be strait: For the Trees, which are 2 or more Years growing to their heading Height, the Stems are always crooked. In the succeeding Years, their Management will be the same as in full grown Trees, which will be hereafter treated of: I shall therefore, now, proceed to treat of the Management of such Trees as are brought over every Year in Chests from *Italy*; which is, indeed, by much the quicker Way of furnishing a Green-house with large Trees; for those which are raised from Seeds in *England*, will not grow so large in their Stems under 18 or 20 Years, as these will have when brought over; and although their Heads are small when we receive them, yet in 3 Years, with good Management, they will obtain large Heads and produce Fruit.

In the choice of these Trees, observe the Difference of their Shoots and Leaves (if they have any upon them)

to distinguish their different Sorts, for the Shaddock and Citrons always make much stronger Shoots than the Orange; for which reason the *Italian* Gardeners, who raise these Trees for Sale, generally propagate those Sorts, and bring few of the *Seville* Orange Trees over, which are much more valuable, both for their Flowers and Fruit; also prefer those that have two good Buds in each Stock (for many of them have but one, which will always produce an irregular Head): The Straitness of the Stem, Freshness of the Branches, and Plumpness of the Bark, are necessary Observations.

When you are furnished with a parcel of Trees, prepare a moderate hot Bed of Tanners Bark, in Length and Breadth according to the Number of Trees to be forced; then put your Trees into a Tub of Water upright, about half way of the Stems, leaving the Head and upper Part of the Stem out of the Water, the better to draw and imbibe the Moisture. In this Situation they may remain two or three Days (according to their Plumpness when you receive them); then take them out, and clean their Roots from all Filth, cutting off all broken or bruised Roots, and all the small Fibres, which are quite dried by being so long out of the Earth; and scrub the Stems with a hard Hair Brush, cleaning them afterwards with a Cloath; then cut off the Branches about three Inches from the Stem, and having prepared a Quantity of good fresh Earth, mixed with very rotten Neats Dung, plant your Trees therein, observing never to put them into large Pots; for if they are but big enough to contain their Roots, it is sufficient at first Planting; and be sure to put some Potsherds and large Stones in the Bottom of each Pot, to keep the Holes from being stopped with Earth, that the Water may freely pass off, and wrap some Haybands round their Stems, from Bottom to Top, to prevent the Sun from drying their Bark; then plunge these Pots into the Bark Bed, watering them well to settle the Earth to their Roots, frequently repeating the same all over their Heads and Stems, being very careful not to over water them, especially before they have made good Roots; and absolve to screen the Glasses of your hot Bed from the Sun in the Heat of the Day.

If your Trees take to grow kindly (as there is little Reason to doubt of, if the Directions given be duly observed), they will have made strong Shoots by the Beginning of *June*; at which Time stop their Shoots, to obtain lateral Branches to furnish their Heads; now give them Air plentifully, and begin to harden them, that in the middle of *July* they may be removed into the open Air, in some warm Situation, defended from the great Heat of the Sun, and from Winds, that they may be hardened before Winter. About the End of *September* you should house these Plants, setting them at first in the front of the Green-house, near the Glasses, keeping the Windows open at all Times when the weather will permit; and about the latter End of *October*, when you bring in the Myrtles, and other less tender Trees, you must set your Oranges in the warmest and best Part of the House, placing lower Plants or Trees in the Front, to hide their Stems. During the Winter, let your Waterings be frequent, but give them not too much at a Time; for now their Heads are but small, and therefore incapable to discharge too great a Quantity of

Moisture; and take great Care to guard them from Frost.

In Spring, when you begin to take out some of your hardiest Sorts of Plants, to thin your House, wash and cleanse the Stems and Leaves of your Orange Trees, taking out the upper Part of the Earth in the Pots, filling them up with good fresh rich Earth, laying thereon a little rotten Neats Dung round the Outside of the Pots; but do not let it lye near the Stem of the Trees; then place them at wider Distances in the House, that the Air may circulate round their Heads; giving them Air discretionally, as the Weather grows warm, but do not remove them into the open Air until the middle or latter End of *May*, when the Weather is settled; for many Times when they are removed out too soon, the Mornings often proving cold, give them at least a great Check which will change the Colour of their Leaves, and many Times kill the extreme weak Part of the Shoots. Let the Situation for your Orange Trees, during the Summer Season, be as much defended from the Sun in the Heat of the Day, and strong Winds, as possible, by tall Trees or Hedges; both of which, are very hurtful to them, if exposed thereto.

As these Trees advance, it will be necessary in the Summer to stop strong Shoots when they grow irregular, to force out lateral Branches to fill the Head; but do not pinch off the Tops of all the Shoots (as is the Practice of some), which will fill the Tree with small Shoots, too weak to support Fruit; but endeavour to form a regular Head, and obtain strong Shoots, taking away weak trifling Branches where they are too close.

During the Summer Season, your Orange Trees will require frequent Waterings in dry Weather, especially if they are large; therefore you should endeavour to have the Water as near the Trees as possible, to save the Trouble of carrying it, which in a large Quantity of Trees, takes up much Time. Your Water should be soft, and exposed to the Air, but never add Dung of any Sort thereto; which, although by many frequently recommended, yet has always been found destructive to these, and all other Trees, if much used; it being like hot Liquors to human Bodies, which, at first taking, seem to add Vigour, yet certainly leave the Body weaker after some Time, than before.

Your Orange Trees will require to be shifted and new potted every other Year, therefore you must prepare a Quantity of good Earth, at least a Year before you intend to use it, that it may be well mixed and perfectly rotten. The best Season for this Work is about the End of *April*, that they may have taken fresh Root before they are removed out of the Green-house; and when this work is performed, it will be necessary to let them remain in the House a Fortnight longer than usual, to be well settled.

In performing this Work, after you have drawn the Trees out of the Pots, you must cut off all the Roots round the Outside of the Ball of Earth, and take away all mouldy Roots (if any such be); then with a sharp Iron Instrument, get as much of the old Earth from between the Roots as possible, being careful not to break or tear the Roots; then set the Root of the Tree into a large Tub of Water for about a Quarter of an Hour, to

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soak the under Part of the Ball of Earth; and afterwards scrub the Stems of the Trees with a hard Hair Brush, cleaning them, and the Heads, with Water, and a soft woollen Cloth. Your Pots being prepared, with some Potsherds and large Stones in the Bottom, put some of your fresh Earth into the Pot, about 3 or 4 Inches thick; and having placed your Tree thereon, in the Middle of the Pot, upright, fill it up with the same rich Earth, pressing it down hard with your Hands; then water the Tree all over the Head, with a Watering Pot that has a Rose upon the Spout, to let the Water fall light and thick (as in a Shower of Rain); and in watering these Trees, do it in the same Manner, during the Time they abide in the House after shifting; this will greatly refresh their Heads, and promote their taking fresh Roots.

When you first set these Trees abroad after shifting, you should place them near the Shelter of Hedges, and fasten their Stems to strong Stakes, to prevent their being disturbed by Winds; which sometimes will blow fresh planted Trees out of the Pots, if too much exposed thereto, and greatly injure their new Roots.

If old Orange Trees have been ill managed, and their Heads become ragged and decayed, the best Method to restore them, is to cut off the greatest Part of their Heads early in *March*, and draw them out of the Tubs or Pots, and shake off the Earth from their Roots, cutting away all small Fibres and mouldy Roots; and then soak and clean their Roots, Stems, and Branches, planting them into good Earth, and setting them into a hot Bed of Tanners Bark, as was directed for such Trees as came from abroad, managing them in the same Manner: By this Method they will produce new Heads, and in 2 Years Time, become good Trees again. But if these are large Trees, and have grown in Tubs for several Years, your best Way will be to prepare a Parcel of rough Baskets (such as are used for basketing Ever-greens, when sent to a distant Place): Let these be somewhat less than the Tubs you design to plant your Trees into; then plant your Trees herein, plunging them into the hot Bed, and about the Beginning of *July*, when they have made good Shoots, you may remove them into the Tubs, with their Baskets about them, filling the empty Space with the same good Earth. This will preserve your Tubs from rotting in the Bark, and the Trees will do as well as if planted in the Tubs at first, provided you are careful in removing the Baskets, not to disturb their Roots; let them remain in the Green-house a Fortnight or three Weeks after planting, before you set them abroad.

These Trees being new potted or tubbed every other Year, those Years in which they are not shifted, you must in *April* observe to take out as much of the old Earth from the Tops of the Pots and Tubs, also round the Sides of them, as possible, without injuring the Roots, and fill them up with fresh Earth; you must also wash and clean their Stems and Leaves from Filth, which will greatly strengthen their Flowering, and cause them to shoot vigorously the following Summer.

In the Management of Orange Trees which are in good Health, the chief Care should be to supply them with Water duly, and not (as is sometimes practised) starve them in Winter, whereby their Fibres are dried, and become mouldy, to the great Prejudice of the Trees; nor to give them Water in too great Abundance; but

rather let their Waterings be frequent, and given in moderate Quantities. Observe also, that the Water has free Passage to drain off, for if it be detained in the Tubs or Pots, it will rot the tender Fibres of the Roots. During the Winter Season, they must have a large Share of Air, when the Weather is favourable; for nothing is more injurious to these Trees than stifling them; nor should they be placed too near each other in the Green-house; but set at such Distance, that their Branches may be clear of each other, and the Air may circulate freely round their Heads. In Summer they should be placed where the Winds are not violent, and to have the Morning and Evening Sun; for if they are too much exposed to the Mid-day Sun, they will not thrive. The best Situation for them is near some large Plantation of Trees, which will break the Force of the Winds, and screen them from the violent Heat of the Sun. In such a Situation they may remain until the Beginning of *October*, or later, according as the Season proves favourable; for if they are carried into the Green-house early, and the Autumn should prove warm, it will occasion the Trees to make fresh Shoots, which will be weak and tender, and so liable to perish in Winter; and sometimes it will occasion their flowering in Winter, which greatly weakens the Trees: Nor should they remain so long abroad as to be injured by Morning Frosts.

The best Compost for Orange Trees is two-thirds of fresh Earth from a good Pasture, which should not be too light, nor over stiff, but rather a Hazel Loam; this should be taken about 10 Inches deep with the Sward, which should be mixed with the Earth to rot, and 1 3d Part of Neats Dung; these should be mixed together, at least 12 Months before it is used, observing to turn it over every Month, to mix it well, and to rot the Sward; this will also break the Clods, and cause the Mould to be finer. Before you make use of this Earth, you should pass it through a rough Screen, to separate the great Stones and the Roots of the Sward; but by no Means sift the Earth too fine; for this is very prejudicial to most Plants, but particularly to Orange Trees.

Of late Years there have been many of these Trees planted against Walls, and Frames of Glafs made to fix over them in Winter; and some few curious Persons have planted these Trees in the open Ground, and have erected moveable Covers to put over these Trees in Winter, which are so contrived as to be all taken away in Summer: Where these have been well executed, the Trees have made great Progress in their Growth, and produced a much larger Quantity of Fruit, which have ripened so well, as to be extremely good for eating. If these are planted either against walls with Design of training the Branches to the Walls, or in Borders at a small Distance, so as to train them up as Standards, there should be a Fire Place or two, in proportion to the Length of the Wall, and Flues carried the whole Length of the Wall, to warm the Air in very cold Weather, otherwise it will be very difficult to preserve the Trees in very hard Winters alive; or, if they do live through the Winter, they will be so much weakened by the Cold, as not to be recovered the following Summer to a proper Strength for bearing; so that wherever these Trees are intended to be placed against or near old Walls, the Flues should be built up against the Front, allowing four Inches

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Thickness of the Brick Work, on each Side the Flues, observing to fasten this with Irons, at proper Distances, to secure it from separating from the old Wall: The Manner of making these Flues is fully explained under the Article of Hot Walls. Where this is made, there will be no Hazard of losing the Trees, be the Winter ever so severe, with a little proper Care; whereas, if this is wanting, it will require great Care and Trouble to cover and uncover the Glasses every Day, when there is any Sun; and if the Wall is not thicker than they are usually built, the Frost will penetrate through the Walls in severe Winters; so that covering and securing the Glasses of the Front will not be sufficient to preserve the Trees, be it done with ever so much Care: Therefore the first Expence of the Walls will save great Trouble and Charge, and be the securest Method.

If the Ground is wet, or of a strong Clay, so as to detain the Moisture, the Borders should be raised above the Level of the Ground, in Proportion to the Situation of the Place; for where the Wet lies in Winter near the Surface, it will greatly prejudice, if not totally destroy the Trees; so that Lime Rubbish should be laid at least 2 Feet thick, in the Bottom of the Border, to drain off the Wet; and the Earth should be laid 2 and a half or 3 Feet thick thereon, which will be a sufficient Depth for the Roots of the Trees. In these Borders there may be a few Roots of the *Guernsey* and *Belladonna* Lillies planted, or any other exotick bulbous-rooted Flowers, which do not grow high, or draw too much Nourishment from the Borders; and these, producing their Flowers in Autumn or Winter, will make a good Appearance, and thrive much better than if kept in Pots.

The Management of the Orange Trees in these Places, is nearly the same as hath been directed for those in Pots or Tubs, excepting that the Borders should be dug, and refreshed with some very rotten Dung, every Year.

AURICULA URSI, Bear's Ear, or Auricula.

To enumerate the Diversities of this Plant, would be almost impossible; for every Year produces vast Quantities of new Flowers, differing in Shape, Size, or Colour of the Flowers; and also in the Leaves of these Plants there is as great a Variety, so that the skilful Florist is capable of distinguishing many of the Sorts thereby.

But as it seldom happens, that such of these Flowers as are at one Time in great Esteem, continue to be regarded a few Years after, (there being still finer or larger Flowers produced from Seeds, which are what the Florists chiefly seek after), it would be needless to mention any of them; wherefore I shall proceed to give the Characters of a good *Auricula*.

1. *The Stem of the Flower should be lofty and strong.*
2. *The Foot Stalk of the Flower should be short, that the Umbel may be regular and close.*
3. *The Pipe or Neck of each Flower should be short, and the Flowers large, and regularly spread, being no ways inclinable to cup.*
4. *That the Colours are very bright, and well mixed.*
5. *That the Eye of the Flower be large, round, and of a good White, or Yellow; and that the Tube or Neck be not too wide.*

All the Flowers of this Kind, that want any of the above mentioned Properties, are now rejected by every good Florist; for as the Varieties every Year increase

from Seeds, so the bad ones are turned out to make room for their Betters; but in some the Passion for new Flowers so much prevails, that, supposing the old Flower greatly preferable to a new one, if it is of their own raising, the latter must take Place of the old one.

In order to obtain good Flowers from Seeds, you must make choice of the best Flowers you have; which should be exposed to the open Air, to have the Benefit of Showers, without which they seldom produce good Seeds: The Time of their Ripening is in *June*, which you will easily know, by the Seed Vessel turning to a brown Colour, and opening; you must therefore be careful lest the Seeds be scattered out of the Vessel, for it will not be all fit to gather at the same Time.

The Time for sowing this Seed is commonly in *August*; but if it be sown any Time before *Christmas*, it will be Time enough.

The best Soil for this Seed is good fresh light sandy Mould, mixed with very rotten Neats Dung, or very rotten Dung from the Bottom of an old hot Bed: With this you should fill your Pots, Boxes, or Baskets, in which you intend to sow your Seeds; and having levelled the Surface of the Earth very smooth, sow your Seeds thereon, covering it very lightly with rotten Willow Mould taken out of the Stems of decayed hollow Willow Trees; then cover the Box, &c. with a Net or Wire, to prevent the Cats, Fowls, &c. from scratching out, or burying the Seeds too deep; for whenever this happens, the Seed will remain a Year in the Ground before the Plants appear, if it should grow at last; so that many Persons never cover these Seeds, but leave them upon the Surface of the Earth, in the Boxes, for the Rain to wash them into the Ground, which is often the best Method: Let these Boxes, &c. be placed so as to receive half the Day's Sun, during the Winter Season; but in the Beginning of *March*, remove them where they may only have the Morning Sun till 10 of the Clock; for your young Plants will now soon begin to appear, which, if exposed to one whole Day's Sun only, will be all destroyed.

During the Summer Season, in dry Weather, often refresh them with Water; but never give them too great Quantities at once. The *July* following, your Plants will be large enough to transplant, at which Time you must prepare a Bed, or Boxes, filled with the above mentioned Soil, in which you may plant them about 3 Inches square; if in Beds, you must shade them every Day, till they are thoroughly rooted, also in very hot dry Weather; but if they are in Baskets, or Boxes, they may be removed to a shady Place.

When the Seedling *Auriculas* are planted in Beds, some rotten Neats Dung should be laid about 10 Inches under the Surface, and beaten down close and smooth: This will prevent the Worms from drawing the young Plants out of the Earth, which they often do where this is not practised. This Dung should be laid about a Foot thick, which will entirely prevent the Worms getting through it until the Plants are well established in the Beds; and the Roots of the *Auriculas* will strike down into the Dung by the Spring, which will make their Flowers stronger than usual: The Beds should be exposed to the East, and screened from the South Sun.

When you have taken all your Plants, which are now come up, out of the Boxes or Pots, level the Earth

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gently again; for it often happens, that some of the Seeds will lie in the Ground two Years before they appear, especially, if they were covered too deep when sown, as was before observed.

The Spring following many of these Flowers will shew; when you may select such of them as have good Properties, which should be removed each of them into a Pot of the same prepared Earth, and preserved until the next Season; at which Time you may form a Judgment of the Goodness of the Flower; but those that produce plain coloured or small Flowers, should be taken out, and planted in Borders in the Out-parts of the Garden, to make a Shew, or gather for Nosegays, &c. the others, which do not produce their Flowers the same Year, may be taken up, and transplanted into a fresh Bed, to remain till you see how they will prove.

The Manner of propagating these Flowers when obtained, is from Offsets, or Slips, taken from the old Roots in April, when the Flowers are in Bloom: These Offsets must be planted into small Pots filled with the same Sort of Earth, as before directed for the Seedlings; and, during the Summer Season, should be set in a shady Place, and must be often (but very gently) refreshed with Water: but in Autumn and Winter should be sheltered from violent Rains. The Spring following, these young Plants will produce Flowers, though but weak; soon after they are past flowering, you must put them into larger Pots, and the 2d Year they will blow in Perfection.

But, in order to obtain a fine Bloom of these Flowers, you must observe the following Directions.

1st, Preserve your Plants from too much Wet in Winter, which often rots and spoils them; but let them have as much free open Air as possible; nor should they be too much exposed to the Sun, which is apt to forward their budding for Flower too soon; and the frosty Mornings, which often happen in March, destroy their Buds, if not protected therefrom. To prevent which, those who are very curious, place their Pots in the Autumn, under a common hot Bed Frame; where, in good Weather, the Plants may enjoy the full Air, by drawing off the Glasses; and in great Rains, Snow, or Frost, the Plants may be screened, by covering them. Where this Method is practised with Judgment, the Flowers will be much stronger, and the Plants will increase faster, than when they are exposed abroad.

2dly, In the Beginning of February, if the Weather is mild, you must take off the upper Part of the Earth in the *Auricula* Pots, as low as you can without disturbing their Roots, and fill up the Pots with fresh rich Earth, which will greatly strengthen them for Bloom; as also prepare your Offsets for transplanting in April, by causing them to push out new Roots.

The Plants with strong single Heads always produce the largest Clusters of Flowers; therefore the curious Florists pull off the Offsets as soon as it can be done with Safety to their growing, to encourage the Mother Plants to flower the stronger; they also pinch off the Flowers in the Autumn, where they are produced, and suffer them not to open, which weakens the Plants.

3dly, You must cover your Pots with Mats in frosty Weather, during the Time of their Budding for Flower, lest the sharp Mornings blight them, and prevent their blowing.

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4thly, When your Flower Stems begin to advance and the Blossom Buds grow turgid, you must protect them from hasty Rains, which would wash off their white mealy *Farina*, and greatly deface the Beauty of their Flowers; but at the same Time observe to keep them as much uncovered as possible, otherwise their Stems will be drawn up too weak to support their Flowers (which is often the Case when their Pots are placed under Walls), and give them gentle Waterings to strengthen them; but let none of the Water fall into the Center of the Plant, or among the Leaves.

5thly, When your Flowers begin to open, remove the Pots upon a Stage (built with Rows of Shelves, one above another, and covered on the Top, to preserve them from Wet:) This should be open to the Morning Sun, but sheltered from the Heat of the Sun in the Middle of the Day: In this Position they will appear to much greater Advantage, than when the Pots stand upon the Ground; for, their Flowers being low, their Beauty is hid from us; but when advanced upon Shelves, we see them in full View: In this Situation they may remain until the Beauty of their Flowers is past; when they must be set abroad to receive the Rains, and have open free Air, in order to obtain Seeds, which will fail, if they are kept too long under Shelter. When your Seed is ripe, observe to gather it when it is perfectly dry, and expose it to the Sun in a Window upon Papers, to prevent its growing mouldy, and let it remain in the Pods till the Season for sowing it.

AURICULA URSI MYCONI. See Verbasicum.

AZALEA. American upright Honeyfuckle.

The Characters are,

It hath a small coloured Empalement which is permanent, and cut into five acute Parts at the Top. The Flower is Funnel-shaped, having a long naked Tube, cut into five Parts, the two upper Segments are reflexed backward, the two Sides are bent inward, and the lower one turns downward. It hath five slender Stamina of unequal Lengths, which have oblong erect Summits. The round Germen supports a long slender Style, crowned with an obtuse Stigma; the Germen afterward becomes a roundish Capsule, having five Cells, which are filled with roundish small Seeds.

The Species are,

1. AZALEA foliis marginis scabris, corollis piloso-glutinosi. Lin. Sp. Plant. 151. Azalea with Leaves having rough Edges, and the Petals of the Flower hairy and glutinous. Virginian Cistus with a Flower and Scent of Honeyfuckle. This is the American upright Honeyfuckle with a white Flower.

2. AZALEA foliis ovatis corollis pilosis staminibus longissimis. Lin. Sp. Plant. 150. Azalea with oval Leaves, hairy Flowers, and the longest Stamina. Virginian Cistus with a large Honeyfuckle Flower less scented, called red American upright Honeyfuckle.

The first of these, here mentioned, is a low Shrub, rising with several Stems, near four Feet high, these are slender, stiff, and have a brown Bark. The Leaves come out in Clusters at the Ends of the Shoots without Order. They are Spear-shaped, but narrow at their Base; their Edges are set with very short Teeth, which are rough. The Flowers come out in Clusters between the Leaves, at the Extremity of the Branches, which are white, with a Mixture of dirty yellow on their Outside. They have a Tube

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a Tube an Inch long, and at the Top are pretty deeply cut into 5 Segments, the 2 upper are reflexed; the 2 side ones are bent inward, and the lower is turned downward. There are 5 slender Stamina, which are a little longer than the Petals of the Flower, supporting oblong Saffron-coloured Summits. The Style is much longer than the Stamina, and crowned by an obtuse Stigma. These Flowers have much the Appearance of those of the Honeyfuckle, and are as agreeably scented. They appear the Middle of July, but are not succeeded by Seeds in England.

The 2d Sort grows taller than the 1st, and in its native Country, frequently rises to 15 Feet, but in England is never more than half that Height. This sends out several Stems from the Root, which are garnished with oblong smooth Leaves, placed alternately, having Foot Stalks. The Flower Stalks arise from the Division of the Branches, which are long and naked, supporting a Cluster of red Flowers, which are tubulous, swelling at their Base like those of the Hyacinth, and contracted at their Neck; they are divided at the Top into 5 equal Segments, which spread open. The 5 Stamina, and the Style, are much longer than the Petals, and stand erect. This flowers about the same Time as the former, but is not so well scented.

These Plants grow naturally in Shade, and upon moist

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Ground, in most Parts of North America, from whence many of the Plants have been sent of late to England, and have produced their beautiful Flowers in many curious Gardens.

They must have a moist Soil, and a shady Situation, otherwise they will not thrive. They can only be propagated by Shoots from their Roots, and laying down their Branches, for they do not produce Seeds here, and if good Seeds could be obtained, they would be difficult to raise, and a long Time before they would flower. But when they are in a proper Situation, their Roots extend, and put out Shoots, which may be taken off with Roots, and transplanted. When any of them are laid down, it should be only the young Shoots of the same Year, for the old Branches will not put out Roots. The best Time for this is at Michaelmas, and if they are covered with some old Tan, to keep out the Frost, it will be of great use to them. The Autumn is also the best Time to remove the Plants, but the Ground about their Roots should be covered in Winter to keep out the Frost; and if this is every Year practised to the old Plants, it will preserve them in Vigour, and cause them to flower well.

AZEDARACH. See Melia.

AZEROLE, or L'AZAROLE. See Mespilus.

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BACCA, i. e. a Berry, is a round Fruit, for the most Part soft, and covered with a thin Skin, containing Seeds in a pulpy Substance; but, if it be harder, and covered with a thicker Skin, it is called Pomum, i. e. an Apple.

BACCHARIS, Ploughman's Spikenard, vulgo.

The Characters are,

The Flower is composed of many hermaphrodite and female Florets, which are included in one common, cylindrical, scaly Empalement. The Florets are equal, the hermaphrodite and female are intermixed. The hermaphrodite Florets are Funnel-shaped and quinquefid, these have 5 slender Stamina, crowned by cylindrical Summits, and an oval Germen, supporting a slender Style, crowned by a bifid Stigma. The Germen afterward becomes a single short Seed crowned with a long Down. The female Flowers have no Stamina, but in other Respects are the same.

The Species are,

1. BACCHARIS foliis lanceolatis longitudinaliter denticulatis. Lin. Hort. Cliff. Ploughman's Spikenard with Spear-shaped Leaves, which are longitudinally indented and sawed. This is the *Senecio Africana arboreus folio serrato*. African Tree Groundsel with a sawed Leaf.

2. BACCHARIS foliis obversè ovatis, superne emarginato-crenatis. Lin. Hort. Cliff. Ploughman's Spikenard, with oval Leaves, whose upper Borders are sawed. Virginia Groundsel Tree, with an Orach Leaf.

The 1st Sort was brought from the Cape of Good Hope, but grows naturally in Peru, and in other Parts of America. This Plant has been long preserved by the Curious in their Gardens. Though there is little Beauty in the Flower, it grows to 5 or 6 Feet high, and is a manageable Shrub; it may be propagated by Cuttings,

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which should be planted in a shady Border during any of the Summer Months, or by Seeds sown in a common Border in the Spring of the Year. These Seeds ripen well in this Country; and, if permitted to scatter on the Ground, the Plants will come up the following Spring. This Shrub is pretty hardy, and will live abroad in mild Winters, if planted in a warm Situation; but is usually kept in Green-houses, and placed abroad in Summer; it requires much Water in warm Weather.

The 2d Sort is pretty common in the Nurseries about London, where it is usually called the Groundsel Tree; it is a Native of Virginia and other Parts of North America, it grows to be a Shrub of about 7 or 8 Feet high, and flowers in October; the Flowers are white, and not very beautiful; but the Leaves continuing green thro' the Year, has occasioned this Shrub to be admitted into many curious Gardens.

This Sort may be propagated by Cuttings planted in April or May, upon a shady Border, and duly watered in dry Weather, until they have taken Root; and, at Michaelmas, they will be fit to transplant where they are to remain; this will live in the open Air, and never is injured by the Cold of our ordinary Winters; but severe Frost will sometimes destroy them.

BACCIFEROUS [*Baccifer*, Lat. of *Bacca*, a Berry, and *fero*, to bear] is an Epithet applied to the Names of any Trees, Shrubs, or Plants, that bear Berries, as Briony, Lily of the Valley, Asparagus, Butchers Broom, Nightshade, Solomon's Seal, and many others.

BALAUSTIA. See Punica.

BALM. See Melissa.

BALSAMINA. The Balsamine, or female Balsamine. See Impatiens.

BALSAMITA.

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BALSAMITA. See Tanacetum.

BAMIA MOSCHATA. See Hibiscus.

BANANA. See Musa.

BANISTERIA. *Hoult. Mss. Lin. Gen. 509. Acer scandens. Sloan. Cat. 137. Plum. Cat. 18.*

The Characters are,

It hath a small permanent Empalement, cut into five acute Segments to the Bottom; the Flower hath five Petals, which are shaped like those of the papilionaceous Tribe, but spread open, having in some Species one, in others two, and in some, several nectarious Glands. It hath ten short Stamina, crowned with simple Summits. There are in some Species three, and in others but one Germen, each supporting a single Style, crowned by an obtuse Stigma, the Germen afterward become so many winged Fruit, like those of the Maple, each containing a single Seed.

The Title of this Genus was given by the late Dr. *Houltoun*, in Honour to the Memory of Mr. *Banister*, a curious Botanist, who lost his Life in the Search of Plants in *Virginia*.

The Species are,

1. *BANISTERIA foliis ovato-oblongis rigidis racemis terminalibus caule fruticoso scandente. Banisteria* with oblong oval stiff Leaves, Spikes of Flowers terminating the Branches, and a shrubby climbing Stalk. *Sir Hans Sloane* titles it *Acer scandens foliis Laurinis. Cat. Jam. 137.* Climbing Maple with Bay Leaves.

2. *BANISTERIA foliis ovatis glabris, floribus corymbosis terminalibus, caule fruticoso scandente. Banisteria* with oval smooth Leaves, Flowers growing in a Corymbus at the Extremity of the Branches, and a shrubby climbing Stalk. This is the *Acer-scandens minus Apocyni facie folio subrotundo, Sloan. Cat. 138.* Smaller climbing Maple with the Appearance of Dogbane, and a roundish Leaf.

3. *BANISTERIA scandens & frutescens folio subrotundo flore ex auro coccineo. Hoult. Mss. Climbing shrubby Banisteria* with a round Leaf, and a Flower changing from a gold to a scarlet.

4. *BANISTERIA foliis cordatis nervosis subtus incanis floribus lateralibus, caule fruticoso scandente. Banisteria* with nervous Heart-shaped Leaves, hoary on their under Side, Flowers growing from the Side of the Branches, and a shrubby climbing Stalk. Climbing American Maple with a roundish Leaf, hairy on the under Side.

5. *BANISTERIA foliis ovato-oblongis acuminatis racemis lateralibus seminibus patentibus. Flor. Zeyl. 176. Banisteria* with oblong oval pointed Leaves, Spikes of Flowers growing from the Side of the Branches, and spreading Seeds. Climbing Maple with Citron Leaves, and a blue Flower growing in Spikes.

6. *BANISTERIA foliis pinnatis, foliolis oblongis obtusis, floribus spicatis caule ramoso aculeato. Banisteria* with winged Leaves, whose small Leaves are oblong and blunt, Flowers growing in a Spike, and a prickly branching Stalk.

7. *BANISTERIA foliis pinnatis foliolis ovatis spicis lateralibus seminibus erectis. Banisteria* with winged Leaves whose small Leaves are oval, Spikes of Flowers growing from the Side of the Branches, and erect Seeds. This is the Climbing Maple with Leaves like Bastard *Acacia*, and a purplish Flower.

The 1st grows naturally in *Jamaica*, from whence the late Dr. *Houltoun* sent me the Seeds. This hath a woody

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Stalk, which twists itself round the neighbouring Trees and rises itself to their Top. It is garnished with Leaves as large as those of the Bay Tree, and of the same Thickness, growing opposite; the Flowers are produced in long branching Spikes at the Ends of the Branches, which are yellow, composed of five small Leaves; these are succeeded by two or three winged Seeds like those of the greater Maple.

The 2d Sort grows naturally in *Jamaica*, and *Campeachy*. This hath slender winding Stalks, which rise five or six Feet high, and are thinly garnished with oval smooth Leaves; the Flowers grow in a round Bunch at the Extremity of the Branches, which are of a brownish yellow Colour, and are succeeded by winged Seeds like the former, but smaller, and have narrower Wings.

The 3d Sort was sent me from *Cartagena*. This sends out many Branches, which divide again into others, growing without Order, and become very bushy upward, sending out Tendrils by which they fasten themselves to the neighbouring Trees, and mount to a great Height, these are garnished with oval stiff Leaves, ending in a Point. The Flowers are produced in loose Spikes at the Ends of the Branches, which are first of a gold Colour, and fade to a scarlet. These are succeeded by Seeds of the same Shape with the former, but are slender, thin, and for the most part single.

The 4th Sort was sent me from *Campeachy*, by Mr. *Robert Millar*; this hath many irregular climbing Stalks which fasten themselves to the neighbouring Trees, and rise to a great Height, these are garnished with Heart shaped Leaves, which are hairy on their under Side, where they have many transverse Ribs. The Flowers come out thinly from the Side of the Branches, which are of a pale yellow Colour, and are succeeded by large winged Seeds, which are double.

The 5th Sort hath strong woody Stalks, which twine about the Trees which grow near it, and rise twenty Feet, high. These are garnished with oblong pointed Leaves, like those of the Bay Tree, growing by Pairs opposite; from the Wings of the Leaves, the Flowers are produced in loose Spikes, upon long Foot Stalks, which are blue, and are succeeded by slender winged Seeds, which spread open from each other.

The 6th Sort was sent me from *Tolu* in *New Spain*. This hath climbing Stalks, which divide into many Branches, garnished with long winged Leaves, composed of about twenty Pair of small oblong blunt Pinnæ, each having a deep Furrow on the under Side. At the Wings of the Leaves the Stalks are armed with short strong Spines, a little crooked. The Flowers grow in long loose Spikes at the End of the Branches, and are succeeded by single Seeds as large as those of the Greater Maple.

The 7th Sort hath strong ligneous Stalks, covered with an Ash-coloured Bark; they divide into many Branches garnished with winged Leaves, composed of five or six Pair of oval small Leaves, nearly of the Size with those of the common *Acacia*, but whitish on their under Side; from the Wings of the Leaves are produced slender Bunches of Flowers growing like those of the Currant Bush, and of a purplish Colour; these are succeeded by broad-winged Seeds, growing erect. It was sent me from *Campeachy*, where it grows naturally.

These Plants are all of them Natives of warm Countries.

tries, so cannot be preserved in *England*, unless they are kept in a Bark Stove. They are propagated by Seeds, procured from the Countries where they grow naturally; for they do not produce Seeds here. These Seeds should be fully ripe when gathered, and put into Sand, in which they should be sent to *England*, otherwise they will lose their vegetative Quality; for from a large Parcel of these Seeds which were sent over in Papers, as fresh as they could possibly arrive here, there was but few Plants raised; and those did not appear till the second Year; for these Seeds are not only in Shape like those of the Maple, but also are of the same Quality, requiring to be sown as soon as possible, after they are ripe, or preserved in Sand till they are sown, otherwise they rarely succeed; therefore when the Seeds arrive, they should be immediately sown in Pots, and, if it happens in Autumn or Winter, the Pots should be plunged into a hot Bed of Tanners Bark, where the Heat is very moderate, and secured from Frost and Wet, till Spring, when they must be removed to a fresh hot Bed, which will bring up the Plants; but if they should not appear the 1st Year, the Pots should be preserved till the next Spring, to see if the Seeds will grow. When the Plants come up, they must be planted in separate Pots, filled with light Earth, and plunged into the Bark Bed, after which they must be treated like other tender Plants from the same Countries.

BAOBOB. See *Adansonia*.

BARBA CAPRÆ. See *Spiræa*.

BARBA JÖVIS. See *Anthyllis*.

BARBAREA. See *Erysimum*.

BARDANA. See *Arctium*.

BARLERIA.

The Name was given to this Genus of Plants by Father *Plumier*, in Honour of *Jacobus Barlier*, of *Paris*, a famous Botanist. We have no *English* Name for it; but the Inhabitants of *Jamaica* call it Snap-dragon.

The Characters are,

It hath a permanent Empalement, divided into four Parts, two large and two smaller, opposite. The Flower is nearly of the Lip Kind, of one Leaf, Funnel-shaped, and divided into five Parts at the Top, the upper Segment being broad and erect, the two Side ones narrower, and the under one which turns downward is divided into two. It hath four slender Stamina, two of which are very short, the two upper are longer, and crowned by oblong Summits. In the Center is placed the oval Germen, supporting a slender Style crowned by a bifid Stigma. The Germen becomes an oblong quadrangular membranaceous Vessel, very elastic, with two Cells, containing two roundish compressed Seeds.

The Species are,

1. *BARLERIA foliis ovatis, pedunculis dichotomis paniculatis*. *Barleria* with oval Leaves, and Flowers growing in Panicles, arising at the Division of the Branches. This is the *Speculum Veneris majus impatiens*. *Sloan. Cat. Jami.* 59. Greater impatient Venus Looking-glass.

2. *BARLERIA foliis ovatis petiolis longissimis, floribus lateralibus, pedunculis multifloris*. *Barleria* with oval Leaves, having very long Foot Stalks, and Flowers growing from the Side of the Branches, many upon each Foot Stalk.

3. *BARLERIA spinis axillaribus foliis lanceolatis integerrimis floribus verticillatis sessilibus*. *Barleria* with Spines on the Side of the Branches, Spear-shaped Leaves which

are entire, and Flowers growing in close Whorls round the Stalk. Thorny *Barleria* with a narrow Nightshade Leaf and a blue Flower.

4. *BARLERIA spinis axillaribus quaternis foliis integerrimis*. *Lin. Sp. Plant.* 636. *Barleria* with Spines growing by fours from the Side of the Branches, and entire Leaves. This is the *Prionitis*. *Hort. Cliff.* and the *Coletta-vestita*. *Hort. Mal.* 9. p. 77.

The 1st Sort rises with a hairy branching Stalk, four or five Feet high, garnished with two oval Leaves at every Joint, growing opposite; upon short Foot Stalks, at every Division of the Branches, comes out a long Foot Stalk, which divides into many smaller, and at each Division of these, is placed a single Flower without Foot Stalk, which hath a long Tube, of a pale Colour, but is spread open at the Top, where it resembles one of *Tournefort's* labiated Flowers; the upper Segment being broad, and shaped like the *Galea*, or Helmet, the two lateral Segments are narrow, and the under one is bent downward, representing the under Lip, and is cut into two Parts. This is of a fine blue Colour. After the Flower is past, the Germen becomes an oblong membranaceous Capsule having two Cells, each containing two compressed roundish Seeds. This Seed Vessel is very elastic, and throws out the Seeds with Violence on their being touched when ripe.

The 2d Sort rises six or seven Feet high, with an upright Stalk, sending out many lateral Branches, from the Bottom upward, so as to form a Sort of Pyramid; the Leaves are oval, and grow opposite upon very long Foot Stalks at every Joint. The Flowers grow on branching Foot Stalks, which come out from the Wings of the Leaves, each standing on a short separate Foot Stalk, about Half an Inch long; these are succeeded by elastic Seed Vessels, like the former.

The 3d Sort rises with upright square Stalks, three Feet high, which are garnished with two oblong entire Leaves at every Joint, above which the Flowers come out in Whorls surrounding the Stalks, and under each Whorl there are six sharp Spines, which are as long as the Empalement of the Flowers. These Joints are about three Inches Distance, the Flowers are blue, and have more of the Form of the labiated Flowers, than any of the other Species. I received this from *Panama*.

The 4th Sort has been long in the curious Gardens of *Holland*, but not many Years in *England*. This sends out many slender Stems from the Root, which rise five Feet high, and are garnished with oval pointed Leaves, two growing opposite at each Joint, which are attended by four long Spines standing cross-ways. This Plant hath not yet flowered in *England*, though there are large Plants of it in the *Chelsea* Garden.

The three 1st Sorts grow naturally in both *Indies*, but the 4th was brought from *Malabar* to the *Dutch* Gardens, and from thence to the Gardens in *England*, where it is at present but in very few Collections.

The three 1st are raised by Seeds, which they annually produce in Plenty; if they are not carefully watched and gathered as they ripen, their Pods burst open and disperse the Seeds; but if they fall on the neighbouring Pots, they will rise and furnish young Plants.

The Roots of these will continue three or four Years, but after the second Year, they grow too rambling, and the

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the lower Parts of the Branches naked, so are not so slightly as the young Plants; therefore a Succession should be provided, and the old ones turned out. They are propagated by Seeds, which, will sow themselves, but where you save the Seeds or receive them from abroad, they must be sown upon a hot Bed in Spring; and when the Plants are fit to remove, they must be each planted in a separate Pot, and plunged into a hot Bed of Tanners Bark, where they must constantly remain, and are managed as other tender Exoticks from the same Countries, giving them Water frequently in Summer, and letting the fresh Air to them every Day in warm Weather, but in Winter they should have little Water, and be kept warm. They flower in June, July, and August, and their Seeds ripen soon after.

The 4th Sort is only propagated by parting its Roots for it never produces Seeds here. It thrives much better in the Bark Stove, than upon Shelves in the dry Stove; for although the Plants may be preserved in the latter, yet they will not make half the Progress as those which are kept in the Tan Bed. This Sort requires Plenty of Water in Summer, and in Winter must be often refreshed with a little at a Time.

BARTRAMIA. *Lin. Gen. Plant.* 480. The Title of this Genus of Plants was given by Dr. Linnaeus, in Honour of Mr. John Bartram of Pennsylvania, who has furnished the European Gardens with many rare Plants; and has made many curious Observations on the Growth of Plants and Trees in that Country, some of which will be exhibited in this Work.

The Characters are,

The Empalement is cut into five narrow Segments, each having a Beard at their Point. The Flower hath five Petals, which are erect and the Length of the Empalement, but spread open above and obtuse: It hath ten slender Stamina the Length of the Tube, crowned by roundish Summits. In the Center is situated the round Germen, supporting a slender Style, crowned by a simple Stigma. The Germen becomes a globular Fruit, echinated on every Side, and breaking into four Parts, each having a single Seed, convex on the Outside, and angular on the inner where they join.

We know but one Species of this Genus at present, viz.

BARTRAMIA. *Flor. Zeyl.* 174. *Bartramia.* This is the *Triumfetta fructu echinato minore.* *Hoult. Mss.* *Triumfetta* with a smaller echinated Fruit. And by *Petiver, Agrimonia Maderassatana, folio rotundo singulari subtus incano.* *Gaz.* 31. *Tab.* 24. *Fol.* 10. *Agrimonia* of Madras, with a single round Leaf, hoary on the under Side.

This Plant grows naturally in both the Indies. I received the Seeds from Panama, and the late Dr. Houston found it near Carthagena. It rises with a soft Stem about four Feet high, dividing into several Branches at the Top, which are garnished with roundish angular Leaves, soft like those of Mallow, and a little hoary on their under Side. The Flowers are produced at the Wings of the Leaves, each having five small yellow Petals, which form a short Tube at their Base, but spread open above the Empalement. These are succeeded by globular Fruit, armed on every Side with Spines like those of *Agrimonia*.

It is a Native of very warm Countries, so will not thrive in England, but in a warm Stove. It is propagated by Seeds, which often ripen here; these must be

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sown on a hot Bed in Spring, and when the Plants are fit to remove, they must be each planted in a small Pot, filled with light rich Earth, and plunged into the Bark, treating them as other tender Plants from the same Countries, always keeping them in the Bark Stove, and not letting them have too much Wet in Winter. The third Year from Seed they will produce Flowers, and the Plants will continue several Years, and flower annually.

BASELLA, or climbing Nightshade from Malabar.

The Characters are,

The Flower hath no Empalement; it is shaped like a Pitcher, fleshy at the Base and swelling, but closed toward the Brim, where it is divided into six Parts, two of which are larger than the others. It hath five Awl-shaped Stamina, which are equal, and fastened to the Petal, crowned with roundish Summits. The globular Germen which is situated in the Center, supports three slender Styles, crowned by oblong Stigma. The Petal of the Flower remains, and incloses a roundish fleshy Berry, including one round Seed.

The Species are,

1. **BASELLA foliis rotundo-cordatis carnosiss.** *Basella* with round Heart-shaped fleshy Leaves. This is the *Cuscuta foliis subcordatis.* *Hort. Cliff.* 39. And the *Basella.* *Hort. Mal.* Climbing Nightshade of Malabar.

2. **BASELLA foliis oblongis flaccidis obtusis.** *Basella* with oblong blunt flaccid Leaves. This is the *Basella Sinica,* or China *Basella,* with a smaller Fruit.

The 1st Sort has thick strong succulent Stalks and Leaves, which are of a deep purple Colour. The Plant requires to be supported, for it will climb to the Height of 8 or 10 Feet, and produce a great Number of Side Branches, which will twist round Stakes, and climb to a great Height, provided the Plants are preserved in the Stove; for if they are exposed to the open Air, they will not grow very large, nor will they perfect their Seeds, except in very warm Seasons; but if placed in the Bark Stove, they will often live through the Winter, and produce many Flowers and Seeds. The Flowers have no great Beauty, but the Plant is preserved for the odd Appearance of the Stalks and Leaves.

There is a Variety with green Stalks and Leaves, the Flowers are of a whitish green Colour, tipped with purple on their Edges, but in all other Respects the same, so is supposed to be only a feminal Variation.

The Seeds of the 2d Sort I received from Dr. Jussieu, of Paris, from which I obtained two Varieties; one with purple Stalks and Leaves, and the other, Leaves variegated with white; but both retain their small Stalks, and oblong flaccid Leaves, smaller Flowers and Fruit, in which they essentially differ from the first.

These Plants are propagated by Seeds, sown in a hot Bed in Spring; when the Plants are fit to remove, they should be each planted in a Pot filled with rich Earth, and plunged into the Tan Bed, where they must be treated as other tender Exotics. They may also be propagated by Cuttings, which should be laid to dry a Day or two after they are cut off, that the Wound may heal, before they are planted, otherwise they will rot. These Cuttings must be planted in Pots filled with light fresh Earth, and plunged into a moderate hot Bed of Tanners Bark, where they will take Root in a Fortnight or three Weeks Time, when they should be treated as the seedling Plants. But as these rise so easily from Seeds, they

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are seldom propagated any other Way, because they are Plants of short Duration. They flower from June to Autumn, and the Seeds ripen in November and December.

As These Plants climb to a considerable Height, and send forth a great Number of Branches, they should have a Place near the Back of the Stove, where they may be fastened to it, or trained up to a Trellise; otherwise they will twist about whatever Plants stand near them, which will be very injurious to the other Plants; whereas, when they are regularly trained to a Trellise, they will have a good Effect in adding to the Variety.

From the Berries of the 1st Sort I have seen a beautiful Colour drawn, but when used for Painting, did not continue long, but changed to a pale Colour; though I believe there might be a Method invented, to fix this beautiful Colour, so as to become very useful: I have been assured, that the Juice of these Berries has been used for staining Callicoes in India.

BASILICUM, or BASIL. See Ocymum.

BASTERIA. Nov. Gen. All-spice.

As this Plant had no proper Title, I have given it this in Honour of my worthy Friend Dr. Job Bastler, F. R. S. of Zurick Zee, in Holland; a Gentleman well skilled in Botany, and has a fine Garden stored with rare Plants, of which he is very communicative to his Friends, as I have many Years experienced.

The Characters are,

The Empalement of the Flower is short, of one Leaf, and cut into five narrow Segments at the Top. It hath a double Series of narrow Petals, which spread open, and turn inward at their Extremity. Under the Receptacle is an oval Germen, having no Style, but five Stigma resting upon it, and surrounded by many short Stamina, crowned by obtuse Summits. The Germen becomes a roundish Fruit, compressed at both Ends, with Cells, containing oblong Seeds.

We have but one Species of this Genus at present in England, which is *BASTERIA foliis ovatis oppositis, floribus lateralibus caule fruticoso ramoso*. Bastleria with oval Leaves placed opposite, Flowers coming from the Side of the Stalks, and a branching shrubby Stalk. This is the *Frutex Corni, cortice Aromatico*. Catesby, Hist. Carol. Vol. I. p. 46, commonly called in Carolina All-spice.

This Shrub grows naturally in America; Mr. Catesby procured it from the Continent, some hundred Miles on the Back of Charles Town, in Carolina.

It seldom rises more than 4 Feet high in this Country, dividing into many slender Branches near the Ground, which are garnished with two oval Leaves, placed opposite at every Joint, which are entire; these have short Foot Stalks; the Flowers grow single at the Extremity of the Foot Stalk, which comes out from the Wings of the Leaves; they have two Series of narrow thick Petals, which spread open, and turn inward at the Top, like those of the Starry Anemone, or the Virgin's Bower: These are of a sullen purple Colour, and have a disagreeable Scent; they appear in May; the Embryo sits beneath the Flower, and supports 5 Stigma; this afterward appears to have 5 Cells, but it never comes to Perfection in this Country, therefore I can only give a Description of it, from an imperfect Rudiment, which the last Season, was fairer than any I had before seen. The Bark of this Shrub is brown, and has a very strong aromack Scent; from whence the Inhabitants of

Carolina gave it the Title of All-spice, by which it is generally known in the Nurseries near London.

This Shrub will thrive in the open Air in England, if planted in a warm Situation, and a dry Soil: It is propagated by laying down the young Branches, which take root in one Year, and may then be taken off, and planted where they are designed to remain, for they do not bear transplanting well, after they are grown to any Size. When the Layers are transplanted, the Surface of the Ground should be covered with Mulch, to prevent the drying Winds from penetrating the Ground to their Roots; and if the Season prove dry, they must be watered once a Week; but should not have too much Wet, for that will rot their tender Fibres.

The best Time for laying down the Branches is in Autumn, but they should not be transplanted till the Spring 12 Months after; for the Spring is the safest Time to remove these Plants. After the Branches are laid down, there should be some old Tanners Bark laid upon the Surface of the Ground, which should also be done every Winter, while the Plants are young, to prevent the Frost destroying them.

This Plant was very scarce in England, till within a Year or two past, that many of them have been brought from Carolina, where they have been greatly increased in the Gardens near Charles Town.

BAUHINIA, Mountain Ebony, vulgo. This Plant was so named by Father Plumier, in Honour of the two famous Botanists, John and Casper Baubin.

The Characters are,

The Empalement of the Flower is permanent, of one Leaf, tubulous, and cut into five Parts at the Top; the Flower is composed of five Petals, which in some Species are Spear-shaped, waved and reflexed, but in others roundish and concave: It hath ten Stamina, of unequal Lengths, some of these are crowned by oval Summits, but others have none: The oblong Germen sits upon the Foot Stalk, supporting a slender declining Style, which turns upward at the Point, crowned by an obtuse Stigma; the Germen becomes a long taper Pod, inclosing a Row of roundish compressed Seeds.

The Species are,

1. *BAUHINIA foliis obliquis emarginatis caule aculeato, floribus spicatis terminalibus*. Baubinia with oblique Leaves indented at the Top, a prickly Stalk, terminated by Spikes of Flowers.

2. *BAUHINIA caule inermi foliis cordatis lobis acutis glabris, floribus spicatis terminalibus*. Baubinia with a smooth Stalk, Heart-shaped smooth Leaves with pointed Lobes, and Spikes of yellow Flowers terminating the Branches.

3. *BAUHINIA foliis ovatis lobis acuminatis semi-ovatis*. Lin. Sp. Plant. 375. Baubinia with oval Leaves, and pointed Lobes which are half oval.

4. *BAUHINIA foliis oblongo-cordatis, lobis acuminatis parallelis trinerviis, siliquis planis*. Baubinia with oblong Heart-shaped Leaves, with pointed parallel Lobes, having three Ribs, and plain flat Pods. Baubinia without Thorns, a narrow bicorned Leaf, and whitish Flowers.

5. *BAUHINIA caule aculeato, foliis cordatis lobis orbiculatis, subtus tomentosis*. Baubinia with a prickly Stalk, and Heart shaped Leaves with round Lobes, which are woolly on their under Side. Prickly Baubinia with a round indented Leaf, and a large white Flower.

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6. *BAUHINIA foliis cordatis lobis semi orbiculatis, floribus paniculatis axillaribus.* *Baubinia* with Heart-shaped Leaves, having roundish Lobes, and Flowers growing in loose Spikes from the Side of the Branches. This is the *Baubinia* without Thorns, with white Flowers.

7. *BAUHINIA foliis subcordatis bipartitis rotundatis caule aculeato, floribus sparsis.* *Baubinia* with Heart-shaped bifid rounded Leaves, a prickly Stalk, and Flowers growing at a Distance. Prickly *Baubinia* with roundish Leaves having two Lobes, and a large white Flower.

8. *BAUHINIA foliis cordatis lobis coadunatis obtusis.* *Baubinia* with Heart-shaped Leaves, and obtuse Lobes which join together. *Chevanna-manduru.* Hort. Mal.

9. *BAUHINIA caule cirrbifero.* Lin. Sp. Plant. 374. *Baubinia* with a Stalk having Tendrils.

10. *BAUHINIA foliis ovatis lobis divaricatis.* Lin. Sp. Plant. 374. *Baubinia* with oval Leaves, whose Lobes spread different Ways.

The 1st Sort grows plentifully in *Jamaica*, and other Sugar Islands in *America*, where it rises to the Height of 16 or 18 Feet, with a crooked Stem, dividing into many irregular Branches, armed with short strong Spines, and garnished with compound winged Leaves, each having 2 or 3 Pair of Lobes, ending with an odd one, which are oblique, blunt, and indented at the Top. The Stalks are terminated by several long Spikes of yellow Flowers, succeeded by Pods, about 3 Inches long, which have Borders, and contain 2 or 3 swelling Seeds. These Pods are glutinous, and have a strong balsamick Scent, as also the Leaves when bruised. It is called in *America*, the *Indian Savin Tree*, from its strong Odour, resembling the common Savin.

The 2d Sort was sent me from *Campeachy* in 1730, by the late Dr. *Houffoun*, where he found it growing naturally. This rises 12 or 14 Feet high, with a smooth Stem, dividing into many Branches, garnished with Heart-shaped Leaves, having 2 smooth pointed Lobes; the Extremity of every Branch is terminated by a long Spike of yellow Flowers, so that when these Trees are in flower, they make a fine Appearance. The Pods are swelling, and about 5 Inches long, each containing 5 or 6 roundish compressed Seeds.

The 3d Sort grows naturally in both *Indies*, where it rises with several pretty strong, upright, smooth Stems, which send out many slender Branches on every Side, garnished with oval Leaves, deeply divided into 2 oval Lobes. The Leaves come out without Order, and have long Foot Stalks, but are much thinner than those of the 2d Sort. The Flowers come out at the Extremity of the Branches, 3 or 4 in a loose Bunch; the Petals are red, or striped with white, others are plain upon the same Branch; the Stamina and Style are white, and stand out beyond the Petals. These Flowers are succeeded by long flat Pods of a dark brown Colour, each containing 5 or 6 roundish compressed Seeds. The Wood is very hard, and veined with black, from whence the Inhabitants of *America* call it Mountain Ebony.

The 4th Sort grows naturally at *Campeachy*, from whence I received the Seeds. This rises to the Height of 20 Feet, with a smooth Stem, which divides into many small Branches, which are garnished with oblong Heart-shaped Leaves, having 2 pointed parallel Lobes, which have each 3 longitudinal Veins. The Leaves

are placed alternately on the Branches, which are terminated by loose Bunches of white Flowers; these are succeeded by very long narrow compressed Pods, with 8 or 10 compressed roundish Seeds in each.

The 5th Sort was sent me from *Carthagena*, in *New Spain*, where it grows in Plenty. This seldom rises more than 10 Feet high, dividing into many irregular Branches, armed with short crooked Spines; the Leaves grow alternately, are Heart-shaped, and have 2 roundish Lobes; they are woolly on their under Side, and have short Foot Stalks. The Flowers grow at the Extremity of the Branches, 2 or 3 together; these are large, of a dirty white Colour, and succeeded by short flat Pods, each containing 2 or 3 Seeds.

The 6th Sort grows naturally at *La Vera Cruz*, from whence it was sent me by the late Dr. *Houffoun*. This rises 25, or 30 Feet high with many irregular Stems, which divide into many slender Branches; these are garnished with Heart-shaped Leaves, having 2 roundish Lobes. The Flowers come out in loose Spikes at every joint from the Wings of the Leaves, with naked Foot Stalks, and are of a dirty white Colour. These are succeeded by oblong compressed Pods, broadest at their Extremity, where they are rounded, each containing 3 or 4 compressed Seeds.

The 7th Sort grows naturally at *Carthagena*, where it was discovered by the late Dr. *Houffoun*, who sent the Seeds to *England*. This rises 20 Feet high, with a strong upright Stem, which sends out many Branches toward the Top; these have Spines growing by Pairs, which are short, strong, and crooked. The Leaves grow alternately, and are Heart-shaped, with two rounded Lobes. The Flowers are large and white, coming out thinly at the Ends of the Branches. The Petals of these are near 2 Inches long, and spread open wide; the Stamina and Style are nearly of the same Length. The Flowers are succeeded by long flat Pods, which are narrow, each containing 5 or 6 Seeds.

The 8th Sort grows naturally in both *Indies*; I received the Seeds of it from *Carthagena*. This rises with a strong Stem, upward of 20 Feet high, dividing into many strong Branches, garnished with Heart-shaped Leaves, having obtuse Lobes which close together. The Flowers grow in loose Panicles at the Extremity of the Branches, which are large, and of a purplish red Colour, marked with white, and have a yellow Bottom. These have a very agreeable Scent. The Flowers are succeeded by compressed Pods, about 6 Inches long, and 3 Quarters of an Inch broad, containing 3 or 4 compressed Seeds in each.

The 9th Sort grows naturally in both *Indies*, where it rises with many slender Stalks, which put out Tendrils, and fastening themselves to the neighbouring Trees, rise to a great Height; the Leaves come out alternately, and are Heart-shaped, standing upon long Foot Stalks; these are 6 Inches long, and 3 Inches and a half broad in the Middle, and deeply cut into 2 pointed Lobes, each having 3 prominent Ribs running longitudinally. This hath not produced Flowers in *England*, nor had I any Account of them with the Seeds, which were sent me from *Campeachy*.

The 10th Sort grows naturally in great Plenty on the north Side of the Island of *Jamaica*, from whence the Seeds were sent me by *William Williams*, Esq; of St. Ann's,

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Ann's, by the Title of Upright Honeyfuckle. This is a low Shrub, seldom rising more than 5 or 6 Feet high, dividing into several Branches, garnished with oval Leaves, divided into 2 Lobes, which spread from each other. The Flowers grow in loose Panicles at the End of the Branches, which are white, and have a very agreeable Scent. These appear the greatest Part of Summer, so is one of the great Beauties of the hot House. The Flowers are succeeded by taper Pods, about 4 Inches long, each containing 4 or 5 roundish compressed Seeds, of a dark Colour.

All these Plants being Natives of warm Countries, will not thrive in *England*, unless kept in a warm Stove. They are propagated by Seeds, procured from the Countries where they grow naturally, for they do not perfect them in *England*.

The last Sort has several Times produced Pods in the *Chelsea* Garden, but they have never come to Maturity. The Seeds should be brought over in their Pods, which will preserve them good. These must be sown in Pots filled with light fresh Earth, and plunged into the hot Bed again, being careful to shade them until they have taken fresh Root, after which they should have fresh Air admitted to them every Day in warm Weather. In Autumn they must be placed in the Bark Stove, and treated as other tender Exoticks, giving them but little Water in Winter. As these Plants frequently flower, so they are worthy of a Place in the Stove.

BAY. See *Laurus*.

BEANS. See *Faba*.

KIDNEY or FRENCH-BEANS. See *Phaseolus*.

BEAN-TREFOIL. See *Cytisus*.

BEAR'S EAR. See *Auricula*.

BEAR'S-EAR SANICLE. See *Verbascum*.

BEAR'S-FOOT. See *Helleborus*.

BECABUNGA, or Brook-lime.

This is a Sort of *Veronica*, or Water Speedwel; of which there are 2 Sorts, one with a long Leaf, and the other round; they are both very common in Ditches, and watery Places, almost every-where in *England*; the 2d Sort is used in Medicine.

BEE, or GNAT-FLOWER. See *Orchis*.

BEECH-TREE. See *Fagus*.

BELL-FLOWER. See *Campanula*.

BELLADONNA. See *Atropa* and *Amaryllis*.

BELLIS. The Daisy.

The Characters are,

It hath a radiated discous Flower, composed of many hermaphrodite Flowers in the Disk, and female Flowers forming the Border, or Rays; these are included in a common Empalement, with a double Series of small Leaves of equal Length. The hermaphrodite Flowers in the Disk, are Funnel-shaped, and cut into 5 Parts at the Brim; the female Flowers are Tongue-shaped, and make the Border; these have no Stamina, but an oval Germen supporting a slender Style, crowned by 2 spreading Stigma; the hermaphrodite Flowers have an oval Germen, supporting a simple Style,

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crowned by a bordered Stigma, attended by five short Stamina, crowned by tubular cylindrical Summits. The Germen becomes a single naked Seed placed vertically.

The Species are,

1. *BELLIS scapo nudo uniflora*. Hort. Cliff. 418. Daisy with a naked Stalk, having one Flower. This is the *Bellis Sylvestris minor*. C. B. P. 267. Smaller wild Daisy.

2. *BELLIS caule subsiliosa*. Lin. Sp. Plant. 887. Daisy with Leaves on the lower Part of the Stalk. This is the smaller Meadow Daisy with a leafy Stalk.

3. *BELLIS hortensis flore pleno majore*. C. B. P. 261. Garden Daisy with a larger double Flower.

The 1st Sort is the common Daisy, which grows naturally in Pasture Land in most Parts of *Europe*, and is often a troublesome Weed in the Grass of Gardens.

The 2d Sort is a low annual Plant, which grows naturally on the *Alps*, and hilly Parts of *Italy*. This seldom rises more than 3 Inches high, with an upright Stalk, garnished with Leaves on the lower Part, but the upper Part is naked, supporting a single Flower like that of the common Daisy, but smaller. This is preserved in some Botanick Gardens for Variety; it was sent me from *Verona*, where it grows wild.

The Garden Daisy is generally supposed to be only a Variety of the wild Sort, which was first obtained by Culture. This may probably be true, but there has not been any Instance of late Years of the wild Sort, having been altered by Culture; for I have kept the wild Sort in the Garden upward of 30 Years, and have constantly parted the Roots, and raised many Plants from Seeds, but they have constantly remained the same; nor have I ever observed the Garden Daisy to degenerate to the wild Sort, where they have been some Years neglected, though they have altered greatly with regard to the Size and Beauty of their Flowers. I have also observed the several Varieties of the Garden Daisy vary from one to the other, therefore I shall not consider them as distinct Species, but shall only mention the Varieties, which are cultivated in the Gardens.

1. The Red and White Garden Daisy, with double Flowers.

2. The double variegated Garden Daisy.

3. The Childing, or Hen and Chicken Daisy.

4. The Cockscorn Daisy with red and white Flowers.

The Garden Daisies flower in *April* and *May*, and make a pretty Variety, intermixed with Plants of the same Growth; they should be planted in a shady Border, and a loamy Soil without Dung, in which they may be preserved without varying, provided the Roots are transplanted and parted every Autumn; which is all the Culture they require, except the keeping them clear from Weeds.

These were formerly planted for Edgings to Borders, but are very unfit for this Purpose; because where fully exposed to the Sun, they frequently die in large Patches, whereby the Edgings become bald in many Places.

BELLIS MAJOR. See *Chrysanthemum*.

BELLONIA. This Plant was so named by Father *Plumier*, in Honour of the famous *Petrus Bellonius*, who has left many valuable Treats on Natural History, &c.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, cut into five Parts at the Top; the Flower is Wheel-shaped,

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of one Leaf, with a short Tube, but spread open above, and cut into five obtuse Segments. It hath five short, Awl-shaped Stamina, crowned by short erect Summits, which close together. The Germen is situated under the Receptacle of the Flower, supporting an Awl-shaped Style, which is longer than the Stamina, and crowned by an acute Stigma. The Germen becomes an oval turbinated Seed Vessel, ending in a Point, having one Cell filled with small round Seeds.

We have but one Species of this Plant, viz.

BELLONIA Lin. Sp. Plant. 172. This is the *Bellonia frutescens, folio melissæ aspero.* Plum. Nov. Gen. 19. Shrubby *Bellonia* with a rough Balm Leaf.

This Plant is very common in the warm Islands of America, from whence I have received the Seeds; which were collected by the late Dr. William Houstoun.

This hath a woody Stem, which rises 10 or 12 Feet high, sending out many lateral Branches, which are garnished with oval rough Leaves placed opposite; the Flowers come out from the Wings of the Leaves, in loose Panicles, of the Wheel Shape, of one Leaf, divided into five Parts; these are succeeded by oval Capsules, ending in a Point, full of small round Seeds.

It is propagated by Seeds, which should be sown early in the Spring, in a Pot filled with light fresh Earth, and plunged into a hot Bed of Tanners Bark, observing to water it frequently, as the Earth appears dry; but you must be careful not to wash the Seeds out of the Ground. When the Plants are half an Inch high, they should be carefully transplanted into Pots filled with light fresh Earth, and plunged into the hot Bed again, observing to water and shade them until they have taken Root; after which Time they should have Air admitted to them every Day, when the Weather is warm, and must be frequently watered. When the Plants have filled these Pots with their Roots, they should be carefully shaken out of them, and their Roots trimmed, and put into larger Pots filled with light fresh Earth, and plunged into the hot Bed again. In warm Weather they should have free Air admitted to them every Day; but in Autumn they must be plunged into the Park Stove, and treated in the same Manner as other tender Exoticks. The second Year these Plants will sometimes flower; but they rarely produce good Seeds in this Climate; however, they may be propagated by Cuttings in the Summer Months, provided they are planted in light Earth on a moderate hot Bed, and carefully watered and shaded until they have taken Root. These Plants must be constantly kept in the Stove, and should have a large Share of free Air in warm Weather; but if they are set abroad, they will not thrive in this Climate.

BELVEDERE. See *Chenopodium*.

BENZOIN, The Benjamin Tree. See *Laurus*.

BERBERIS, The Barberry, or Pipperidge Bush.

The Characters are,

The Flower hath a coloured Empalement, which spreads open, composed of six concave Leaves, three of which are alternately larger than the other; the Flower is of six Leaves, which are roundish, concave, and little larger than the Empalement; there are two coloured Nectariums, fastened to the Base of each Petal, and six obtuse compressed erect Stamina, with two Summits fastened on each Side their Apex. The Germen is cylindrical, and the Length of the Stamina, having no Style, but crowned by an orbicular Stigma broader

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than the Germen, having a sharp Border: The Germen becomes an obtuse cylindrical umbilicated Berry, having a Puncture, and one Cell, inclosing two cylindrical Seeds.

The Species are,

1. **BERBERIS pedunculis racemosis.** Mat. Med. 290. Barberry with branching Foot Stalks. This is the *Berberis dumetorum.* C. B. P. 454. The Common Barberry.

2. **BERBERIS foliis obverse-ovatis.** Barberry with oval obverse Leaves. This is the *Berberis latissimo folio Canadensis.* H. R. Par. Broad leaved Canada Barberry.

3. **BERBERIS pedunculis unifloris.** L. Barberry with a single Flower on each Foot Stalk. This is the *Berberis Cretica buxi folio.* Tourn. Box-leaved Barberry of Crete.

The 1st Sort grows naturally in the Hedges in many Parts of England, but is cultivated in Gardens for its Fruit, which is pickled, and used for garnishing Dishes. This Shrub rises with many Stalks from the Root, to the Height of 8 or 10 Feet, which have a white Bark, yellow on the Inside; the Stalks and Branches are armed with sharp Thorns, which commonly grow by threes; the Leaves are oval, obtuse, and slightly sawed on their Edges. The Flowers come out from the Wings of the Leaves, in small Bunches, like those of the Currant Bush, and are yellow; these are succeeded by oval Fruit, which are first green, but when ripe turn to a fine red Colour. The Flowers appear in May, and the Fruit ripens in September.

There are 2 or 3 Varieties of this Shrub, which have been mentioned as distinct Species; one is the *Berberis sine nucleo.* C. B. P. Barberry without Stone. The 2d is *Berberis fructu albo.* Barberry with white Fruit. The 3d is the *Berberis orientalis procerior fructu nigro suavissimo.* Tourn. Cor. Taller Eastern Barberry with a black sweet Fruit. The first of these is certainly accidental, because the Suckers taken from those Bushes being transplanted, commonly produce Fruit with Stones; so it is the Age of the Plant which occasions that Variation. The Sort with white Fruit seldom bears; the Leaves of this are of a lighter green Colour, and the Bark of the Stalks are whiter than those of the common, which are the only Differences between them; for the Fruit is seldom produced here. The 3d Sort appears the same with the common; and only differs in the Colour and Flavour of the Fruit, so is only a Variety.

The common Sort is generally propagated by Suckers, which the Roots put out in great Plenty; but these Plants are very subject to send out Suckers in greater Plenty than those which are propagated by Layers; therefore the latter Method should be preferred. The best Time for laying down the Branches, is in Autumn, when their Leaves begin to fall; the young Shoots of the same Year are the best for this Purpose; these will be well rooted by the next Autumn, when they may be taken off, and planted where they are designed to remain. Where this Plant is cultivated for Fruit, it should be planted single, (not in Hedges, as was the old Practice) and the Suckers every Autumn taken away, and all the gross Shoots pruned out. By this Method the Fruit will be fairer, and in great Plenty. A few of these Shrubs may be allowed to have a Place in Wildernesses, or Plantations of Shrubs, where they make a pretty Variety; but they should not be planted in great Quantities, near Walks much frequented, because their Flow-

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ers emit a very strong disagreeable Odour.

The *Canada* Sort was more common some Years past, than at present. The Leaves are much broader, and shorter than those of the common Sort, and the Fruit is black when ripe. This may be propagated in the same way as the common Sort, and is equally hardy.

The Box-leaved Sort is at present very rare in *England*; and while young, the Plants are somewhat tender, so have been killed by severe Frost. This never rises more than 3 or 4 Feet high in *England*, but sends out many Stalks from the Root, which are strongly armed with Spines at every Joint; the Leaves are produced without Order, and are shaped like those of the narrow leaved Box Tree; the Flowers come out from between the Leaves, each upon a slender Foot Stalk; but these are not succeeded by Fruit in *England*.

This Sort may be propagated by laying down the Branches as the first; but when the young Plants are taken off, they should be planted in Pots, and sheltered under a Frame in Winter, till they have obtained Strength, when they may be planted in a warm Situation.

BERMUDIANA. See *Sisyrinchium*.

BERNARDIA. See *Croton*.

BESLERIA. This Plant was named after *Basilius Besler*, an Apothecary at *Nuremberg*; who was the Author of a Book, entitled *Hortus Eysletensis*.

The Characters are,

The Flower is of the Lip Kind, with an Empalement of one Leaf, which is erect, and cut into five acute Parts at the Brim: The Flower is of one Leaf, and quinquefid, the Segments being roundish, the lower being large, and the two upper less divided; it hath four Stamina in the Tube of the Flower, two of which are longer than the other, and crowned by small Summits: The oval Germen supports an Awl-shaped Style, crowned by an acute Stigma; this becomes an oval Berry, with one Cell filled with small Seeds.

The Species are,

1. *BESLERIA pedunculis ramosis, foliis ovatis. Lin. Sp. Plant. 619.* *Besleria* with branching Foot Stalks, and oval Leaves. This is the *Besleria Melissae Tragi folio. Plum.* *Besleria* with a Leaf of *Tragus's* Balm.

2. *BESLERIA pedunculis simplicibus confertis, foliis lanceolatis. Lin. Sp. Plant.* *Besleria* with simple Foot Stalks, growing in Clusters, and Spear-shaped Leaves. *Besleria* with Golden Rod Leaves, and a smaller yellow Flower.

3. *BESLERIA pedunculis simplicibus solitariis, involucri pentaphyllis. Lin. Sp. Plant. 619.* *Besleria* with simple Stalks growing single, and a five leaved Involucrum. Climbing crested *Besleria* with a black Fruit.

The 1st Sort hath a smooth woody jointed Stalk; at each Joint are placed two oval nervous Leaves opposite, which are crenated on their Edges; the Flowers come out from the Wings of the Leaves, on short branching Foot Stalks, each sustaining 6 or 8 Flowers, which stand each upon a separate smaller Foot Stalk. These are of one Leaf, of an anomalous Figure, and quinquefid; after the Flower is past, the Germen becomes an oval soft Berry, with one Cell filled with small Seeds.

The 2d Sort rises with a ligneous Stem, 6 or 7 Feet high, dividing toward the Top into many irregular Branches, garnished with Spear-shaped Leaves, having many transverse Veins, sawed on their Edges; the Flowers come out at the Wings of the Leaves, in large

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Clusters, each having a separate Foot Stalk: These are small, tubulous, of a pale yellow Colour, succeeded by round soft Berries, inclosing many small Seeds.

The 3d Sort hath a creeping Stalk, which sends out Roots at every Joint; these are garnished with oval Leaves placed opposite, which have many transverse Ribs, and are sharply sawed on their Edges; from the Wings of the Leaves come out the Foot Stalks of the Flowers single, each sustaining one tubulous irregular hairy Flower, divided at the Top into 5 obtuse Parts, with a large five leaved Involucrum, deeply sawed on the Border: After the Flower is past, the Germen becomes a hairy Placenta, in the Center of the Empalement, containing many small Seeds.

These Plants grow naturally in the warm Parts of *America*, from whence the Seeds have been brought to *Europe*, and cultivated in some curious Botanic Gardens.

These Seeds should be sown on a hot Bed early in the Spring; and when the Plants are come up half an Inch high, they should be each transplanted into a small Pot filled with light fresh Earth, and plunged into a hot Bed of Tanners Bark, observing to water and shade them until they have taken Root; after which Time they should have Air and Water in Proportion to the Warmth of the Season, and the Heat of the Bed in which they are placed. When the Plants have filled these small Pots with their Roots, they should be shaken out, and their Roots trimmed, and then put into larger Pots filled with light fresh Earth, and plunged into the hot Bed again; where they should have a large Share of fresh Air in warm Weather, and must be frequently watered. With this Management they will thrive very well in Summer, but in Winter they must be removed into the Stove, where they must be placed in a temperate Warmth, and should be often, but sparingly, watered. The 2d Year these Plants will flower, and sometimes they will perfect their Seeds in this Country; but they must be constantly preserved in the Stove; for they will not live in the open Air.

BETA, the Beet.

The Characters are,

The Flower hath a five leaved concave permanent Empalement. It hath no Petal, but five Awl-shaped Stamina, placed opposite to the Leaves of the Empalement, crowned by roundish Summits; the Germen is situated below the Receptacle, supporting two short erect Styles, crowned by pointed Stigma; the Germen becomes a Capsule with one Cell, having a single Seed, wrapped up in the Empalement.

The Species are,

1. *BETA caulibus decumbentibus, foliis triangularibus petiolatis.* Beet with declining Stalks, and triangular Leaves having Foot Stalks. Wild maritime Beet.

2. *BETA foliis radicalibus petiolatis, caulibus sessilibus, spicis lateralibus longissimis.* Beet with the lower Leaves having Foot Stalks, those upon the Stalks without, and very long Spikes of Flowers proceeding from the Sides of the Branches. This is the *Beta Alba, C. B. P. 118.* Common White Beet, or *Cula* of the Shops.

3. *BETA foliis latissimis, radice pyramidato carnosâ.* Broadest leaved Beet, with a pyramidal fleshy Root. The *Beta Rubra, C. B. P. 118.* Red Beet with a Turnep Root.

There are several Varieties of this Genus, some of which are cultivated for the Kitchen; but as these have been

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been improved by Culture, so they must not be deemed distinct Species. There are some who have supposed all the Species were only femal Variations, but after more than forty Years Cultivation, I could never observe, that either of the three Species here enumerated have altered from one to the other. The only Alteration which I have observed in the third Species, has been in the Colour of the Leaves and Roots, which will be hereafter mentioned.

The 1st Sort grows naturally on the Banks of the Sea, and in Salt Marshes in divers Parts of England. This is supposed to be the same with the 2d Species; but I have brought the Seeds from the Places where they grow naturally, many Times, and have cultivated the Plants with Care, but could not find any of them vary from their Parent Plants in their Characters, so that I can make no doubt of its being a distinct Species.

The 2d Sort is cultivated in Gardens for its Leaves, which are used in Soups; the Root of this Sort seldom grows larger than a Man's Thumb; the Stalks grow erect, and are garnished with oblong Spear-shaped Leaves, growing close to the Stalk; the Spikes of Flowers come out from the Wings of the Leaves, which are long, and have narrow Leaves placed between the Flowers. The lower Leaves of the Plant are thick and succulent, and their Foot Stalks broad. The Varieties of this are, the White Beet, the Green Beet, and the *Swiss* or Chard Beet. These will vary from one to the other by Culture, as I have often experienced, but never alter to the 1st or 3d Sort.

The 3d Sort hath large thick succulent Leaves, for the most part of a dark red, or purple Colour. The Roots are large, and of a deep red Colour; the larger these Roots grow, the tenderer they will be; and the deeper their Colour, the more they are esteemed. The Varieties of this are, the common Red Beet, the Turnep-rooted Red Beet, the green-leaved Red Beet, and the Yellow-rooted Beet.

The 2d Sort, which is cultivated for its Leaves, is commonly sown by itself, and not mixed with other Crops. This is sown the Beginning of March, upon an open Spot of Ground, not too moist; the Seeds should be sown thinly, because the Plants require Room to spread; for when they are too close, the Leaves will be small and full of Fibres, so unfit for the Purposes designed. When the Plants have put out four Leaves, the Ground should be hoed, as is practised for Carrots, carefully cutting up all the Weeds, and also the Plants where they are too near each other, leaving them at least four Inches asunder: If this is performed in dry Weather, all the Weeds will be destroyed; but as young Weeds will soon appear, in 3 Weeks or a Month's Time, the Ground should be a 2d Time hoed over, to clean it, and thin the Plants to a greater Distance; for by this Time they will be past Danger, so should not be left nearer than six Inches, if Regard is had to the Goodness of their Leaves: And if it is of the *Swiss* Kind, with broad Leaves, the Plants must not be nearer than nine or ten Inches. If the second hoeing is well performed, and in dry Weather, the Ground will be clean a Month longer, when it should be hoed over a 3d Time; which, if properly done, will destroy all the Weeds; so that after this, the Plants will spread and prevent the Weeds

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from growing, therefore will want but little cleaning for a considerable Time, and the Leaves will soon be fit for Use, when the outer large ones should be first gathered, leaving the small inner Leaves to grow larger; so that a small Spot of Ground will supply a moderate Family, and will furnish a new Supply of Leaves for two Years, provided the Plants are not permitted to run up to Seed, for after that their Leaves will not be good: Therefore those who are curious in these Herbs, must sow a fresh Spot of Ground annually, because these Plants naturally run up the 2d Year; and although the Roots may be continued longer, by cutting off the Stalks when they begin to shoot, yet the Leaves will not be so large or tender on these Roots, as on the young Plants.

The Red Beet is frequently sown with Carrots, Parsneps, or Onions, by the Kitchen Gardeners near London, who draw up their Carrots or Onions when young, to give the Beets Room to grow, when they are gathered; but where these Crops are not timely removed from them, it will be a better Method to sow the Beets separately. This Sort requires a deep light Soil, for their Roots run deep in the Ground, and in shallow Ground, they will be short and stringy. The Seeds should be sown in March, and treated as the former Sort; but the Plants should not be left nearer than a Foot Distance, or in good Land a Foot and a Half, for the Leaves will cover the Ground at that Distance. The Roots will be fit for Use in Autumn, and continue good all the Winter; but in Spring, when they begin to shoot, they will be hard and stringy. A few Roots may be left for Seed, or some of the fairest Roots transplanted to a sheltered spot, where they may be defended from strong Winds, which break down their Stalks if not well supported, especially when the Seeds are formed, which becoming heavy as they increase in Bulk, are apt to weigh down the slender Stalks upon which they grow. The Seed will ripen in September, when the Stalks should be cut off, and spread on Mats to dry, and afterward threshed out, cleaned, and put up in Bags for Use.

BETONICA, Betony.

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, which is tubulous, and cut at the Brim into five Parts. The Flower is of one Leaf, of the Lip Kind, with a cylindrical incurved Tube; the upper Lip is roundish, plain, erect, and entire; the lower Lip is cut into three Parts, the middle Segment being broad, roundish, and indented at the End. It hath four Awl-shaped Stamina, two long and two shorter, which incline to the upper Lip; these have roundish Summits. The Germen is quadripartite, supporting a Style of the Length and Figure of the Stamina, crowned by a bifid Stigma. The Germen afterward becomes four naked oval Seeds, lodged in the Emplacement.

The Species are,

1. BETONICA *spica interrupta*, corollarum lacinia labii intermedia emarginata. Flor. Leyd. Prod. 316. Betony with an interrupted Spike, and the middle Segment of the lower Lip of the Flower indented at the End. *Betonica purpurea*. C. B. P. 235. Purple or Wood Betony.
2. BETONICA *foliis radicalibus ovato-cordatis, caulibus lanceolatis obtusis spica crassiore*. Betony whose under Leaves are Heart-shaped, those on the Stalks Spear-shaped and obtuse, and a thicker Spike of Flowers.

Betonica

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Betonica major Danica. Greater Danish Betony.

3. *BETONICA foliis triangularibus obtusis spica brevior.* Betony with obtuse triangular Leaves, and a shorter Spike of Flowers. This is the *Betonica minima Alpina Helvetica.* Park. Theat. 650. The least Alpine Betony.

4. *BETONICA spica integra, corollarum lacinia labii intermedia integerrima.* Flor. Leyd. Prod. 316. Betony with a whole Spike, and the middle Segment of the lower Lip entire. *Betonica Orientalis.* Tourn. Eastern Betony with very long narrow Leaves, and a thicker Spike of Flowers.

5. *BETONICA foliis lanceolatis obtusis incanis spica florum crassiori.* Betony with obtuse Spear-shaped hoary Leaves, and a thicker Spike of Flowers. This is the *Betonica Italica incana, flore carneo.* Barrel. Icon. 340. Hoary Italian Betony, with a fleshy Flower.

6. *BETONICA verticillata calycibus spinosis.* Hort. Upsal. 165. Betony with Flowers growing in Whorls round the Stalk, and prickly Flower Cups. *Betonica arvensis annua, flore ex albo flavescente.* Tourn. Inst. 203. Annual Field Betony with a yellowish white Flower.

7. *BETONICA spica basi foliosa.* Lin. Sp. Plant. 573. Betony with a Spike leafy at the Base. *Betonica montana lutea.* Barrel. Icon. 339. Yellow Mountain Betony.

The 1st Sort grows naturally in Woods, and on shady Banks, in England, so is seldom cultivated in Gardens. This Sort is used in Medicine, and greatly esteemed as a vulnerary Herb. There is a Variety of it with a white Flower, which grows naturally in Kent.

The 2d Sort grows naturally in Denmark. This differs greatly from our common Sort, the lower Leaves being much broader and Heart-shaped; those upon the Stalks are Spear-shaped and rounded at the End, and the Stalks are larger, stand upright, and are terminated by thicker Spikes of Flowers. These Differences are constant, for I have many Years propagated them by Seeds, and have never found the Plants vary.

The 3d Sort grows naturally upon the Alps, where it rises about four Inches high; and when cultivated in a Garden, not above seven or eight. The leaves of this are much broader at the Base than those of the common Sort, and very different in their Shape, being triangular and blunt at the End. The Flowers grow in very short close Spikes, on the Top of the Stalks. These Differences constantly hold in the Plants raised from Seeds.

The 4th Sort was discovered by Dr. Tournefort in the Levant, who sent the Seeds to the Royal Garden at Paris, and most of the Botanick Gardens in Europe have been since furnished with it. The Leaves are very long, narrow, and hairy, and are neatly crenated on their Edges. The Flowers grow in very close thick Spikes at the Top of the Stalks, which are larger, and of a lighter purple Colour than those of the common Sort.

The 5th Sort grows naturally in Italy, upon the Hills, from whence I received the Seeds. The Leaves of this Sort are broader, and not so long as those of the common Sort, and are hoary; the Stalks and Spikes of Flowers are shorter and much thicker, and the Flowers are larger and of a Flesh Colour. This Sort constantly keeps the same from Seeds.

There is another Sort which Tournefort and others mention, by the Title of *Betonica rubicundissimo flore montis aurei*; which differs but little from the 5th, ex-

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cept in the Colour of the Flower, so I doubt of its being specifically different from that.

The 6th Sort is annual, and grows naturally on arable Land in France, Italy, and Germany; if brought into a Garden, the Seeds will scatter, and produce Plenty of the Plants without farther Care.

The other Sorts are perennial Plants, which may be propagated by Seeds, or parting their Roots. They are all very hardy, but require a shady Situation and a moist stiff Soil, in which they will thrive better than in rich Ground. The best Time to part and transplant the Roots is in Autumn, but the Seeds should be sown in Spring upon a shady Border, and when the Plants come up, they require no Care but to keep them clean from Weeds, and to thin them where they are too close. They all flower in May and June, and the Seeds ripen in August.

BETONICA AQUATICA. See Scrophularia.

BETONICA PAULI. See Veronica.

BETULA, the Birch Tree.

The Characters are,

It hath male and female Flowers, at separate Distances on the same Tree; the male Flowers are collected in a cylindrical Katkin, scaly, loose, and imbricated on every Side, each Scale having three Flowers, which have two minute Scales on the Side. The Flower is composed of three equal Florets, fixed to the Empalement by a single Scale; each Floret is of one Leaf, divided into four oval Segments which spread open; these have four small Stamina, crowned by double Summits. The female Flowers grow in a Katkin, in the same Manner as the male. The common Katkin is imbricated, having three Scales which are every Way opposite, fastened to the central String or Axis, having two Heart-shaped Flowers pointing toward the Apex, where it is sinuated. They have no visible Petals, but a short oval Germen supporting two bristly Styles, the Length of the Scales of the Empalement, and crowned with a plain Stigma. It hath no Pericarpium, but the Seeds are included in the Scales of the Katkin, which are oval and winged.

The Species are,

1. *BETULA foliis ovatis acuminatis serratis.* Hort. Cliff. 442. Birch Tree with oval sawed Leaves ending in Points. The common Birch Tree.

2. *BETULA foliis orbiculatis crenatis.* Flor. Lap. Birch Tree with round crenated Leaves. *Betula pumila foliis subrotundis.* Amman. Dwarf Birch with roundish Leaves.

3. *BETULA foliis cordatis oblongis acuminatis duplicato-serratis.* Lin. Sp. Plant. Birch Tree with rhomboid oval pointed Leaves, which are doubly sawed. *Betula nigra Virginiana.* Pluk. Alm. Black Virginia Birch Tree.

The 1st is the common Birch Tree, which is so well known as to need no Description. This is not much esteemed for its Wood, but it may be cultivated to Advantage upon barren Land, where better Trees will not thrive; for there is no Ground so bad, but this Tree will thrive in: It will grow in moist springy Land, or in dry Gravel or Sand, where there is little Surface: On Ground which produced nothing but Moss, these Trees have succeeded so well, as to be fit to cut in ten Years after planting, and have been sold for near 10 l. per Acre standing, and the after Produce has been considerably increased. As many of the Woods near London, which were chiefly stocked with these Trees, have been of late Years

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Years grubbed up, the Value of these Plantations have advanced in Proportion; therefore those Persons who are possessed of such poor Land, cannot employ it better, than by planting these Trees, especially as the Expence of doing it is not great.

The best method to cultivate this Tree, is to furnish yourself with young Plants from the Woods, where they naturally grow, and are generally found there in great plenty; but in Places where there are no young Plants to be procured near, they may be raised from Seeds, which should be carefully gathered in Autumn, as soon as the Scales under which they are lodged begin to open, otherwise they will soon fall out and be lost: The Seeds are small, so should not be buried deep in the Ground. Autumn is the best Season to sow them, and in a shady Situation the Plants will thrive better than when they were exposed to the full Sun; for in all Places where there are any large Trees, their Seeds fall, and the Plants come up well without Care; so that if the young Plants are not destroyed by Cattle, there is generally plenty of them, in all the Woods where there are any of these Trees. These wild Plants should be carefully taken up, so as not to destroy their Roots. The Ground where they are to be planted, will require no Preparation; all that is necessary to be done, is to loosen the Ground with a Spade or Mattock, in the Places where the Plants are to stand, making Holes to receive their Roots, covering them again when the Plants are placed, closing the Earth hard to their Roots. If the Plants are young, and have not much Top, they will require no pruning; but where they have bushy Heads, they should be shortened to prevent their being shaken and displaced by the Wind. When the Plants have taken Root, they will require no other Care, but to cut down the great Weeds which would overhang them; which may be done with a Sickle, being careful not to cut or injure the young Trees. This need not be repeated oftener than twice in a Summer the two first Years, after which Time the Plants will be strong enough to keep down the Weeds, or at least be out of Danger from them.

These may be planted any Time from the Middle of October till the Middle of March, when the Ground is not frozen; but in dry Land Autumn is the best Season, and Spring for moist. The Distance they require is six Feet square, that they may soon cover the Ground, and by standing close they will draw each other up; for in Situations where they are much exposed, if not pretty close, they will not thrive so well.

If the Plants take kindly, they will be fit to cut in about ten Years; and afterward, every seventh or eighth Year, if designed for the Broom-makers only; but where they are intended for Hoops, they should not be cut oftener than every twelfth Year.

The Expence of making these Plantations, in Places where young Plants can be easily procured, will not exceed 40 s. per Acre, and the after Expence of cleaning about 20 s. so that the whole will not be more than 3 l. and if the Land so planted be of little Value, the Proprietor cannot make better Use of his Money; for when the Wood is cut, it will repay the Expence with Interest, and a perpetual Stock left upon the Ground. I have seen several of these Plantations made upon Land which

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would not lett for 1 s. per Acre, which has produced from 10 to 12 l. an Acre, clear of the Expence in Cutting, and this every twelfth Year. The Broom-makers are constant Customers for Birch, in all Places within twenty Miles of London, or where it is near Water Carriage, in other Parts the Hoop-benders are the Purchasers; but the larger Trees are bought by Turners, and the Wood is used for making Ox-yokes, and other Instruments of Husbandry.

In the Northern Parts of Europe, this Wood is greatly used, for making Carriages and Wheels, being hard and of long Duration. In France it is generally used for making wooden Shoes. It makes very good Fuel.

In some Places these Trees are tapped in the Spring, and the Sap drawn out to make Birch Wine, which has been recommended for the Stone and Gravel, as is also the Sap unfermented. The Bark of the Birch Tree is almost incorruptible. In Sweden the Houses are covered with it, where it lasts many Years. It frequently happens, that the Wood is entirely rotten, and the Bark perfectly found and good.

The 2d Sort grows naturally in the Northern Parts of Europe, and upon the Alps; this rises about two or three Feet high, having slender Branches, which are garnished with round Leaves, but seldom produces either male or female Flowers here. It is preserved in some curious Gardens for Variety, but is of no Use.

The 3d and 4th Sorts grow naturally in North America, from whence their Seeds have been sent to Europe and many of the Plants raised, which thrive very fast here. In Canada these Trees grow to a large Size, where the 3d Sort is called *Merisier*. The Natives of that Country make Canoes of the Bark of these Trees, which are very light, and of long Duration.

Both these Sorts may be propagated by Seeds, in the same Manner as the first, and are equally hardy; some of the Trees do now begin to produce their Katkins in England, so we may hope to have Plenty of their Seeds of our own Growth; for at present we are supplied with them from America. As these grow more vigorously than the common Sort, and thrive on the most barren Ground, they may be cultivated to great Advantage in England, for their Wood is much esteemed in Canada, where the Trees grow to a large Size: They are by no Means an unsightly Tree in Parks, for their Stems are Strait, the Bark smooth, and their Leaves much larger than those of the common Birch, so may be planted in Places where few other Trees will thrive.

BIDENS. Tourn. Inst. R. H. 362. Tab. 262. Lin. Gen. Plant. 840. Water Hemp Agrimony.

The Characters are,

The common Empalement is erect, and often equal, composed of small oblong concave Leaves; it hath a compound Flower, the Middle or Disk is composed of hermaphrodite Flowers, which are Funnel-shaped and quinquefid. These have five short capillary Stamina, with cylindrical Summits, and an oblong Germen supporting a single Style the Length of the Stamina, crowned by two oblong reflexed Stigma. The female Flowers which compose the Border are naked; these are all succeeded by a single angular obtuse Seed, having two or more Bristles or Teets, by which they fasten themselves to whatever passes by them when ripe.

There are several Species of this Plant, which are seldom

seldom admitted into Gardens, some of which are common Weeds in England, therefore I shall only mention those which are preserved in the Gardens of the curious.

1. *BIDENS foliis pinnatis serratis seminibus erecto-constantibus calycibus frondosis corollis radiatis. Lin. Sp. Plant. 832.* Water Hemp Agrimony with winged sawed Leaves, Seeds standing erect, a very bushy Empalement, and radiated Flower. This is the *Bidens Canadensis latifolia flore luteo. Tourn. Inst. 362.* Broad leaved Canada Hemp Agrimony, with a yellow Flower.

2. *BIDENS foliis oblongis integerrimis caule dichotomo floribus solitariis sessilibus. Lin. Sp. Pl. 832.* Hemp Agrimony with oblong entire Leaves, a Stalk divided into two Parts, and a single Flower growing close to the Stalk. *Bidens nodiflora brunellæ folio. Hort. Elth. 52.* Hemp Agrimony, with a knotted Flower and Self-heal Leaf.

3. *BIDENS foliis simplicibus serratis petiolatis, floribus globosis, pedunculis elongatis seminibus levibus. Lin. Sp. Plant. 833.* Hemp Agrimony with single sawed Leaves having Foot Stalks, globular Flowers with longer Foot Stalks, and smooth Seeds. *Bidens scabra flore niveo. Hort. Elth. 55.* Rough Hemp Agrimony, with a Snow-white Flower, and a Leaf with three Lobes.

4. *BIDENS calyce oblongo squamoso seminibus radii corollæ non deciduâ coronatis. Juss. Hemp Agrimony with an oblong scaly Empalement, and the Seeds crowned by the Rays of the Florets, which are permanent.*

5. *BIDENS foliis ovatis serratis petiolatis, caule fruticoso. Hort. Cliff. 399.* Hemp Agrimony with oval sawed Leaves having Foot Stalks, and a shrubby Stalk.

6. *BIDENS foliis ternatis acutis serratis caule scandente floribus paniculatis.* Three leaved Hemp Agrimony, with pointed sawed Lobes, a climbing Stalk, and Flowers growing in Panicles. This is the *Chrysanthemum trifoliatum scandens, flore luteo. Sloan. Cat. Jam. 125.* Three leaved climbing Corn Marigold, with a yellow Flower and a long bearded Seed with two Teeth.

7. *BIDENS foliis ovatis serratis, inferioribus oppositis, superioribus ternatis intermedio majore. Lin. Sp. Plant. 833.* Hemp Agrimony with oval sawed Leaves, the lower ones growing opposite, but the upper having three Lobes, the Middle of which is the largest. This is the *Chrysanthemum conyzoides nodiflorum semine rostrato bidente. Sloan. Cat. Jam. 126.* Corn Marigold like Fleabane, with a knotted Flower and double bearded Seed.

The first Sort grows naturally in Virginia, Maryland, and Canada, where it is often a troublesome Weed. It rises about 3 Feet high, sending out many horizontal Branches garnished with trifoliate Leaves, deeply sawed on their Edges; the Flowers are produced at the End of the Branches, in small Clusters, which are yellow, and succeeded by oblong square Seeds, having two crooked Horns, by which they fasten themselves to the Clothes of those who pass near them. There are two Sorts of this, one whose Flowers have a short Empalement, which is *Tournefort's* broad leaved Canada *Bidens*; the other hath a leafy Empalement, and is by *Jussieu* distinguished by the Title of *Capite folioso*. But I am not very sure of their being distinct Species, though I have many Years cultivated both; for their Seeds when ripe spread so far, that in a small Garden, they cannot be kept separate. It is easily propagated by Seeds sown in Spring, in an open Situation, where if they are permitted to

scatter, the Plants will come up the following Spring, and two or three of them may be transplanted where they are to grow, and after they are rooted, will require no farther Care. This is annual, and decays soon after the Seeds are ripe.

The 2d Sort grows naturally in warm Countries. This is an annual Plant, which rises near 3 Feet high, dividing upward into several Branches, which are garnished with oblong entire Leaves; the Flowers come out single at the Divisions of the Branches, sitting close; these are white, and are succeeded by smooth Seeds.

This Sort must be sown upon a moderate hot Bed in Spring, and afterward treated like other hardy annuals, planting them into the full Ground the latter End of May. They flower in June, and their Seeds ripen in Autumn, soon after which the Plants will decay.

The 3d Sort grows naturally in South Carolina, and at Campeachy, from whence the late Dr. *Houssoun* sent me the Seeds. This is also an annual Plant, which rises 3 Feet high, dividing upward into many slender Branches, whose Joints are far asunder; the Leaves come out by Pairs at each Joint, upon long slender Foot Stalks, which are oval, ending in a Point. The Flowers grow at the Extremity of the Branches, in small globular Heads, very white, standing upon very long Foot Stalks, and succeeded by smooth Seeds. This must be sown upon a hot Bed, and treated as the former. It flowers and feeds about the same Time.

The Seeds of the 4th Sort were sent from Peru to the Royal Garden at Paris, where it has flourished a few Years past, and the Plants have produced Seeds there, which have been communicated to several curious Gardens in Europe. The Seeds were sent me in the Year 1753, and the following Summer the Plants flowered, and produced good Seeds in the Chelsea Garden. It rises to the Height of 4 Feet; the Stalks become hard and ligneous, and divide into many Branches, garnished with oblong smooth Leaves, which are entire; these are placed opposite by Pairs: At the Extremity of the Branches the Flowers are produced, each standing single upon a Foot Stalk garnished with smaller Leaves, close to the Empalement of the Flower. This Empalement is composed of many Scales, placed imbricatum, like the Tiles on a House, and closely embrace the Flower, which is composed of a Border of female Flowers, having each one Leaf, stretched out like a Tongue, forming the Ray of the Flower; and in the Center are many hermaphrodite Flowers, which are tubulous, and these compose the Disk of the Flower: Each of these have five slender Stamina, supporting a globular Summit. In the Center is placed the Germen, which becomes a single oblong Seed. The whole of the Flower continues, and never falls off; so that when the Seeds are ripe, the Rays of the Flower are remaining firm, and only change their Colour, adhering so closely to the Seeds, as to render it difficult to part them. The Flowers when blown are as large as those of the common Marigold, and are of a yellow Colour.

The Seeds of this Plant must be sown upon a hot Bed in Spring, and when the Plants come up, they must be transplanted to another hot Bed, to bring them forward; but they must not be drawn too much, which will render them very weak; therefore when the Weather is

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favourable, they should have a large Share of Air admitted to them. By the Beginning of June they should be inured to bear the open Air by Degrees, and about the Middle of that Month, they should be transplanted, with Balls of Earth to their Roots, some of them into Pots, and others into warm Borders, shading them until they have taken Root; after which they will require no farther Care, but to water them in dry Weather. In July the Plants will flower, and the Seeds are ripe in October, soon after which the Plants decay. But in wet cold Seasons the Seeds will not ripen in England, unless the Plants are sheltered under Glasses.

The 5th Sort rises with a shrubby Stalk, to the Height of 6 or 7 Feet, dividing into many Branches, whose Joints are very distant, at each of which are placed two oval Leaves, which are slightly sawed on their Edges, and have short Foot Stalks. The Flowers are produced at the End of the Branches in small Clusters, each standing upon a long naked Foot Stalk; these are succeeded by flat Seeds, having two short Teeth at their Extremity. I received the Seeds from Carthage in New Spain. This is propagated by Seeds, sown on a hot Bed in Spring; and when the Plants are fit to remove, they must be each planted in a small Pot, and plunged into a fresh hot Bed, and treated as other tender Plants from the same Countries, and in Autumn placed in the Stove: The following Summer they will flower and produce Seeds, but the Plants will abide some Years with proper Management.

The 6th Sort rises with a climbing slender Stalk, to the Height of 10 Feet, dividing into many Branches, garnished with trifoliate sawed Leaves: The Flowers grow in large Panicles at the End of the Branches; they are yellow, and succeeded by flat Seeds having two Teeth. This grows naturally in Jamaica, from whence I received the Seeds. It must be treated as the former Sort, and the Plants will continue two or three Years.

The 7th Sort is annual. It rises about 2 Feet high, and sends out several lateral Shoots, which at the Bottom have oval Leaves placed by Pairs at the Joints, but upward they are trifoliate, the middle Lobe being very large, and the two side ones small; the Flowers are produced at the Wings of the Leaves, upon short leafy Foot Stalks, and are yellow, but very small. It flowers in July, the Seeds ripen in Autumn and must be sown on a hot Bed, and treated as the 2d Sort.

BIFOLIUM, Twyblade. See Ophrys.

BIGNONIA. Tourn. Inst. 164. Lin. Gen. Plant. 677. Trumpet Flower, or Scarlet Jasmine.

The Characters are,

The Empalement is Cup-shaped, quinquefid, and of one Leaf. The Flower is of the ringent, or grinning Kind, tubulous, with long Chaps, which are swelling, and Bell-shaped, divided into five Parts at the Top; the two upper Segments are reflexed, and the under spread open; it hath four Awl-shaped Stamina, shorter than the Petal, two longer than the other, having oblong reflexed Summits. In the Center is an oblong Germen, supporting a slender Style, crowned by a roundish Stigma. The Germen afterward becomes a bivalve Pod, with two Cells, filled with compressed winged Seeds, lying over each other imbricatum.

The Species are,

1. BIGNONIA foliis pinnatis, foliolis incis, geniculis

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radicatis. Lin. Hort. Cliff. 217. Bignonia with winged Leaves, which are cut on their Edges, and Roots coming out at their Joints. This is the Bignonia Americana Fraxini folio flore amplo Phœnicio. Tourn. Inst. 164. American Bignonia with an Ash Leaf, and a large Scarlet Flower, commonly called Trumpet Flower.

2. BIGNONIA foliis pinnatis minoribus, foliolis mucronatis, marginibus serratis geniculis radicatis. Bignonia with smaller winged Leaves, ending in a sharp Point, sawed on their Edges, and Roots coming from the Joints. Bignonia fraxini foliis, coccineo flore minore. Catesb. Ash-leaved Bignonia, with a smaller Scarlet Flower.

3. BIGNONIA foliis simplicibus cordatis, caule erecto, floribus diandris. Lin. Sp. Plant. 622. Bignonia with single Heart-shaped Leaves, an upright Stalk, and Flowers with two Stamina. This is the Bignonia Urucu foliis. Catesb. Carol. 1. p. 49. Bignonia with Anatto Leaves, a dull white Flower spotted with purple and yellow within, commonly called Catalpa.

4. BIGNONIA foliis pinnatis, foliolis lanceolatis acutis serratis, caule erecto, floribus paniculatis erectis. Bignonia with winged Leaves, having acute sawed Lobes, an upright Stalk, and Flowers growing in Panicles erect. Bignonia arbor flore luteo. Plum. Sp. Plant. 5. Tree Bignonia with a yellow Flower, and an Ash Leaf.

5. BIGNONIA foliis conjugatis cirriformis foliolis cordatis lanceolatis foliis imis simplicibus. Vir. Cliff. 59. Bignonia with conjugated Leaves, having Tendrils; the Leaves Spear-shaped, and the lower Leaves single. This is the Bignonia Americana. Breyn. Ic. 33. American Bignonia, putting out Tendrils, and a short Pod.

6. BIGNONIA foliis conjugatis, cirrho brevissimo arcuato tripartito. Lin. Sp. Plant. 623. Bignonia with jointed Leaves, and short arched Tendrils, divided into three Parts. This is the Bignonia Americana capreolis aduncis donata, siliqua longissima. Tourn. American Bignonia putting out crooked Tendrils, and a very long Pod.

7. BIGNONIA foliis conjugatis cirriformis, foliolis ovatis acuminatis undatis perennantibus. Bignonia with jointed Leaves, having Tendrils, whose Lobes are oval, pointed, waved, and ever-green.

8. BIGNONIA foliis simplicibus lanceolatis caule volubili. Lin. Sp. Plant. 623. Bignonia with single Spear-shaped Leaves, and a twining Stalk. This is the Jasminum odoratum Virginianum. Park. Catesb. 1. p. 53. Yellow sweet-scented Jasmine of Virginia, which is climbing and ever-green.

9. BIGNONIA foliis digitatis integerrimis. Hort. Cliff. 497. Bignonia with fingered Leaves, which are entire. Bignonia arbor pentaphylla flore roseo. Plum. Sp. Plant. 5. Five leaved Tree Bignonia with a Rose Flower.

10. BIGNONIA foliis imis digitatis, superioribus simplicibus vel ternatis, caule erecto arboreo. Bignonia with under Leaves fingered, the upper single, or trifoliate, and an upright Tree Stem. This is the Leucoxydon arbor siliquosa, quinis foliis, floribus Nerii, alato semine. Pluk. Alm. Tree Milkwood, having Pods, with five Leaves, the Oleander Flower, and winged Seed; called in America, White, or Milkwood, and Tulip Flower.

11. BIGNONIA foliis conjugatis cirriformis, foliolis cordato-ovatis, floribus racemoso-paniculatis. Lin. Sp. Plant. 623. Bignonia with jointed Leaves, having Tendrils, the Lobes oval and Heart-shaped, and Flowers in branching Panicles.

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Panicles. *Bignonia bifolia scandens, flore violaceo odoro*, Plum. Cat. 5. Climbing two leaved *Bignonia*, with a sweet Violet Flower, and a hard oval Fruit.

12. *BIGNONIA foliis bipinnatis foliolis lanceolatis integris*. Lin. Sp. Plant. 625. *Bignonia* with double winged Leaves, entire and Spear-shaped. This is the *Arbor Guajaci latiore folio, Bignonia flore caerulea*. Catesb. Carol. 1. p. 42. commonly called Bastard *Guajacum*.

13. *BIGNONIA foliis conjugatis cirrbosis-foliolis cordatis foliis imis ternatis*. Vir. Clif. 60. *Bignonia* with jointed Heart-shaped Leaves, having Tendrils, and the under Leaves trifoliate. This is the *Pseudo Apocynum feliculis maximis obtusis*. Mor. Hist. 3. p. 62. Bastard Dogbane with large blunt Leaves, and large winged Seeds.

14. *BIGNONIA foliis conjugatis cirrbosis foliolis cordato-ovatis subtus pubescentibus, floribus paniculatis siliquis longissimis compressis*. *Bignonia* with jointed Heart-shaped Leaves, hairy beneath, and having Tendrils, Flowers growing in Panicles, and long compressed Pods. This is the *Bignonia bifolia frutescens, foliis subtus villosis*, Houss. Cat. Two leaved shrubby *Bignonia*, with Leaves hairy on their under Side, and long compressed Pods.

15. *BIGNONIA foliis ternatis glabris, foliolis ovatis acuminatis, caule fruticoso ramoso, floribus paniculatis, siliquis compressis*. Smooth three leaved *Bignonia*, with oval Lobes ending in a Point, a shrubby branching Stalk, Flowers growing in Panicles, and compressed Pods. *Bignonia frutescens triphylla glabra*. Houss. Cat. Smooth three leaved shrubby *Bignonia* with long compressed Pods.

The 1st Sort grows naturally in *Virginia* and *Canada*, and the 2d in *Carolina*; they have both been old Inhabitants of the *English* Gardens, but the 1st is the most common in *Europe*. These have been supposed to be the same, but there is a great Difference; the 1st having much larger Leaves, composed of a greater Number of Lobes, which are longer, and deeper cut on their Edges; the Flowers are larger, and of a paler Colour, and the Pods longer. This Sort frequently produces Pods in *England*, but the 2d has had not the least Appearance of any, though the Plants are as large, and have grown in the same Situation many Years. These Differences are constant from Seeds, so they are not feminal Variations.

These have large rough Stems, which send out many weak trailing Branches, putting out Roots at their Joints, which fasten themselves to the Trees in their natural Places of Growth, whereby they climb to a great Height; and in *Europe*, where they are generally planted against Walls, they fasten themselves thereto by their Roots, which strike into the Mortar of the Joints, so strongly, as to support their Branches, and will rise to the Height of 40 or 50 Feet. The Branches are garnished with winged Leaves at every Joint, placed opposite, which are composed of four Pair of small Leaves, terminated by an odd one; these are sawed on their Edges, and end in a long sharp Point. The Flowers are produced at the Ends of the Shoots of the same Year, in large Bunches; these have long swelling Tubes, shaped somewhat like a Trumpet, from whence they had their Name. They are of an Orange Colour, and appear the Beginning of *August*.

The 2d Sort is like the 1st, but the Leaves are smaller; the Lobes are placed closer, and the Flowers

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not so large, but of a beautiful red Colour; these appear at the same Time as the former.

Both these Sorts are very hardy, so will thrive in the open Air; but as they have trailing Branches, they must be supported; therefore they are usually planted against Walls, or Buildings, where, if they have Room, they will spread to a great Distance, and rise very high, so are very proper for covering Buildings, which are unsightly. They may also be trained up against the Stems of Trees, where they may be so managed, as to make a fine Appearance when they are in flower.

They are propagated by Seeds, but the young Plants so raised do not flower in less than seven or eight Years; therefore those which are propagated by Cuttings or Layers, from flowering Plants, are most esteemed, because they will flower in two or three Years after planting. The old Plants also send out many Suckers from their Roots, which may be taken off, and transplanted where they are to remain, for these Plants will not transplant safely if they are old.

The necessary Culture for these Plants after they are established, is to cut away all the small weak Shoots of the former Year in Winter, and shorten the strong ones to about 2 Feet long, that young Shoots may be obtained for flowering the following Summer; these Plants are of long Duration; for some which have been planted more than sixty Years, are now very vigorous, and produce Flowers in Plenty every Season.

If these Plants are propagated by Seeds, they should be sown upon a moderate hot Bed to bring up the Plants, which should be soon inured to the open Air, to prevent their being drawn up weak; and the first Winter these young Plants should be screened from hard Frost, which will kill their tender Shoots; but the Spring following they may be planted in the full Ground, in a Nursery Bed, at a Foot Distance from each other, where they may remain one or two Years to get Strength, and afterwards planted where they are designed to grow.

The 3d Sort was brought into *England* by Mr. Catesby, about 30 Years past, who found it growing naturally on the Back of *South Carolina*, at a great Distance from the *English* Settlements, and brought the Seeds to *Charles Town*, where the Inhabitants have propagated and dispersed it through most of the *English* Settlements in *North America*. It is also now very plenty in the *English* Gardens, especially near *London*, where there are some of them near 20 Feet high, with large Stems.

This rises with an upright Stem, covered with a smooth brown Bark, and sends out many strong lateral Branches, garnished with very large Heart-shaped Leaves, placed opposite at every Joint. The Flowers are produced in large branching Panicles toward the End of the Branches, and are of a dirty white Colour, with a few purple Spots, and faint Stripes of yellow on their Inside. The Tube of the Flower is much shorter, and the upper Part more expanded, than those of the two former Sorts, and the Segments are deeper cut, and waved on their Edges. The Flowers are in *America* succeeded by very long taper Pods, filled with flat winged Seeds, lying over each other like the Scales of Fish. In *England* there has not as yet been any of the Pods produced; but the Seeds are annually brought over from *South Carolina*. These should be sown in Pots, and plunged into a moderate hot

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Bed to bring up the Plants, which should be inured to the open Air by Degrees, and, in the Beginning of *June*, placed abroad in a sheltered Situation, till Autumn, when they should be put under a common Frame to screen them from Frost in Winter; but in mild Weather they must be fully exposed to the open Air. The following Spring these may be taken out of the Pots, and planted in a Nursery Bed, in a warm Situation, where they may remain two Years to get Strength, and afterwards planted in the Places where they are designed to remain. These Plants, when young, are frequently injured by Frost, for they shoot pretty late in the Autumn, so that the early Frosts often kill the Extremity of their Branches; but as the Plants advance in Strength, they become more hardy, and are seldom injured but in very severe Winters. It is late in the Spring before these Trees come out, which has often caused Persons to believe they were dead, and some have been so imprudent, as to cut them down on that Supposition, before the Tree was so well known.

It may also be propagated by Cuttings, which should be planted in Pots in the Spring before the Trees begin to push out their Shoots, and plunged into a moderate hot Bed, observing to shade them from the Sun in the Middle of the Day, and refresh them occasionally with Water, which must not be given to them in too great Plenty. In about six Weeks these will have taken Root, and made Shoots above, so should have Plenty of Air admitted to them constantly, and hardened by Degrees to bear the open Air, into which they should be removed, and treated in the same Manner as the seedling Plants, and the Spring following planted out into a Nursery Bed, as before directed.

As these Trees have very large Leaves, they require a sheltered Situation, for where they are much exposed to strong Winds, their Leaves are often torn and rendered unsightly, and many Times their Branches split and broken, their Leaves being so large, that the Wind has great Force against them. These produce their Flowers in *August*, they delight in a light moist Soil, where they make great Progress, and in a few Years will produce Flowers. It is generally known in the Gardens by the Indian Title of *Catalpa*.

The 4th Sort is a Native of the warmer Parts of *America*, where it was discovered by Father *Plumier*, who made a Drawing of it, and gave the Title of *Clematitis* to it, which he afterward altered to *Bignonia*, when he became better acquainted with *Tournefort's System of Botany*. This rises with an upright Stem, to the Height of 12 or 14 Feet, sending out many Side Branches, garnished at every Joint by two long winged Leaves placed opposite; the small Leaves which compose these, are long and Spear-shaped, ending in a Point, and slightly sawed on their Edges, each Leaf being composed of six Pair, and terminated by an odd one. The Flowers are produced in loose Panicles at the End of the Branches, and are shaped like those of the other Species, but spread open more at the Top. These are yellow, and succeeded by compressed Pods about 6 Inches long, having 2 Rows of flat winged Seeds, like those of the other Species.

I received this Sort first in 1729, from *La Vera Cruz*, where the late Dr. *Housson* found it growing naturally in great Plenty; I since received the Seed of it from the

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Island of *Berbuda*, by the Title of *Candle Wood*.

This Sort is propagated by Seeds, which must be sown on a hot Bed; and the Plants afterward transplanted into separate small Pots, filled with light fresh Earth, and plunged into a fresh hot Bed, to bring the Plants forward, that they may obtain Strength before Winter; in the Autumn they must be removed into the Bark Stove, and during the Winter should have but little Water, but in Summer they must be frequently refreshed with it, but not given in too great Plenty. The Plants should constantly remain in the Bark Stove, and be treated in the same Manner as other tender Plants from those Countries. The third Year from Seed they will flower, but they do not produce Seeds in *England*.

The 5th Sort grows naturally in *Virginia*, and other Parts of *America*; this hath very slender trailing Stalks, which must be supported; where it naturally grows, the Branches fasten themselves by their Tendrils to whatever Plants are near them, and extend to a great Distance: In this Country they require the Assistance of a Wall with a good Aspect, for they are impatient of much Cold, so should be covered in severe Frost; the Branches are clothed with oblong Leaves, which remain green all the Year; these are often single at Bottom, but upward are placed by Pairs opposite at each Joint; the Flowers are produced at the Wings of the Leaves, which are yellow and shaped like those of the Foxglove; these appear in *August*, but are not succeeded by Pods in this Country. This is propagated by Seeds, which should be sown on a moderate hot Bed, and treated as the 1st and 2d Sorts. The ground about the Roots of these Plants, should be covered in Autumn with some old Tanners Bark to keep out the Frost in Winter; and in very severe Frost, the Branches should be covered with Mats, to prevent their being destroyed. With this Management I have had the Plants flower very well in the *Chelsea* Garden.

The 6th Sort hath slender Stalks like the former, which require the same Support; these are garnished with small oval Leaves, entire, and placed opposite by Pairs on each Side, at every Joint; at the same Places come out the Tendrils, by which they fasten themselves to the Plants which grow near them; these end in three distinct Parts; the Flowers come out from the Wings of the Leaves, which are shaped like those of the former Sort, but smaller, and are not succeeded by Seeds in this Country. This grows naturally in *Carolina*, and the *Bahama Islands*, but will live in the open Air, if planted against a South Wall and sheltered in very severe Frost. It is propagated as the former Sort.

The 7th Sort hath very weak slender Branches, which put out Tendrils at the Joints, by which they fasten themselves to the neighbouring Plants: At each Joint there are four Leaves, two on each Side opposite; these are oval, pointed, and waved on their Edges, of a bright Green, and continue through the Year; the Branches ramble very far where they have Room; but I have not seen any Flowers produced on them, though there are several very large Plants in the Gardens. I received this Sort from *La Vera Cruz*, in *New Spain*; it thrives against a warm Wall in the open Air very well, with the same Treatment as the two former Sorts.

The 8th Sort grows naturally in *South Carolina*, where

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it spreads over the Hedges, and at the Season of flowering, perfumes the Air to a great Distance; it also grows in *Virginia*, but not in so great Plenty as at *Carolina*; the Inhabitants there call it yellow Jasmine, I suppose from the sweet Odour of its Flowers. This rises with slender Stalks, which twist themselves round the neighbouring Plants, and mount to a considerable Height; the Branches are garnished with oblong pointed Leaves, which come out single and opposite to each other at every Joint; these are ever-green. The Flowers come out from the Wings of the Leaves at every Joint, sometimes but two, at other Times four at each Joint; these stand erect, are Trumpet-shaped, yellow, and have a very sweet Scent, in the Countries where they naturally grow; these are succeeded by short taper Pods, filled with small winged Seeds.

The Plants of this Sort, when young, are impatient of Cold, so must be sheltered in Winter until they have obtained Strength, when they should be planted against a warm Wall, and in Winter protected from Frost by Coverings of Mats, and the Ground about their Roots covered with Tan. With this Management I have had them flower very well in the *Chelsea* Garden. It is propagated by Seeds, as the former Sorts.

The 9th Sort was sent me from *Jamaica*. This rises with an upright Stem, near 20 Feet high, sending out many lateral Branches, which are covered with a white Bark. The Leaves come out opposite at the Joints, upon long Foot Stalks, these are composed of five oval stiff Leaves, joined at one Center at their Base, where they are narrow, but widen toward the Top, where they are rounded and obtuse. These are of a pale green, inclining to white on their under Side; the Flowers are produced at the Ends of the Branches, four or five together, on very short Foot Stalks, they are narrow at Bottom, but the Tube enlarges upward, and at the Top spreads open wide. They are of a pale bluish Colour, smell sweet, and are succeeded by taper crooked Pods about 4 Inches long, which are filled with oval compressed Seeds, with Wings of a Silver Colour.

This Sort will not thrive in *England*, but in a Stove. It is propagated by Seeds, which must be sown on a hot bed and the Plants treated as the 4th Sort.

The 10th Sort I received from *Barbadoes*, by the Title of White Wood, where it rises with an upright Stem, to the Height of 43 Feet; and the Seeds are dispersed by Wind to the neighbouring Lands, where the Plants come up in great Plenty. This and the former Sort have been generally confounded, and supposed to be the same; but the growing Plants are extremely different; for the under Leaves of this are sometimes composed of five, at other times of four oval Leaves; and on the upper Part of the Branches, they come out single, placed by Pairs opposite: These are as large as those of the Bay Tree, of equal Thickness, and round at their End; each of these have a long Foot Stalk, whereas those of the former join at their Base to one Center. The Flowers of this Sort are produced single, at the Wings of the Leaves, which have a narrow Tube near 2 Inches long, but spread open very wide at the Top, where they are cut into five unequal Segments, fringed on their Borders. The Flowers are white, and have an agreeable Odour, but the Pod I have not seen.

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This Plant must be preserved in the Bark Stove, and treated as the 4th Sort. It is propagated by Seeds, but will take Root from Cuttings in Summer, if planted in Pots, and plunged into a Bark Bed. It has flowered several Years in the *Chelsea* Garden, in *August*.

The 11th Sort was sent me from *La Vera Cruz*, this rises with ligneous Stalks, which put out Tendrils at the Joints, whereby they fasten themselves to the neighbouring Plants; the Leaves come out double, on each Side the Branches, upon pretty long Foot Stalks, two at each Joint opposite, which are Heart-shaped and entire, having a fine hairy Down on their under Side. The Flowers grow in loose Spikes at the Ends of the Branches, which are tubulous, and do not spread much at the Top; they are of a Violet Colour, and smell very sweet. These in their native Country are succeeded by oval, hard, ligneous Seed Vessels, which open in four Parts, and are full of compressed winged Seeds.

This Sort is propagated by Seeds, sown on a hot Bed, and the Plants must be treated as the fourth Sort; they will not thrive here unless placed in the Bark Stove.

The 12th Sort grows naturally in the *Bahama Islands*, from whence Mr. *Catesby* sent the Seeds in 1724, and many of the Plants were raised in the Gardens near *London*. This rises to the Height of 20 Feet, where it grows naturally, sending out many lateral Branches, garnished with compound winged Leaves, each having eleven alternate Wings, with Spear-shaped small Lobes, which grow alternate, and are entire; at the Ends of the Branches the Flowers are produced in very loose Panicles; the Foot Stalks branching into three or four, each sustaining a single blue Flower, with a long swelling Tube, cut into five unequal Segments at the Top, where it spreads open. The Flowers are succeeded by oval Seed Vessels, which open in two Parts, and are filled with flat winged Seeds.

The 13th Sort hath a woody Stem, sending out many Branches, which have four narrow Borders or Wings running longitudinally, so as to resemble a square Stalk; the Leaves are produced by Pairs, on each Side the Branches opposite; they are Heart-shaped, smooth, and have short Foot Stalks; these have Tendrils coming out by their Foot Stalks, which fasten themselves to the Plants which grow near them, and thereby rise to a great Height. The Flowers are produced in small Clusters from the Wings of the Leaves, which have pretty long Tubes, spread open at the Top, and are of a pale yellow Colour. These are succeeded by flat Pods a Foot in Length, which have two Rows of flat winged Seeds, joined to the intermediate Partition.

This Sort was sent me from *Campeachy*, where it naturally grows, and rises to the Tops of the tallest Trees, to whose Branches these Plants fasten themselves by their Tendrils or Claspers, and are thereby supported. This is propagated by Seeds, which must be sown on a hot Bed, and the Plants treated as the 4th Sort; for they will not thrive in this Country, unless they have a warm Stove, where the Branches will rise to the Height of 20 Feet in three Years; and if permitted, will spread to a great Distance. It has flowered in the Garden at *Chelsea*, but doth not produce Pods in *England*.

The 14th Sort was sent me from *Campeachy*, by Mr. *Robert Millar*; this hath woody Stalks, which rise to a great

great Height, climbing on the Trees which grow near it, fastening themselves by Claspers, and sending out many ligneous Branches, which are garnished with oval Heart-shaped Leaves, by fours, two on each Side, growing opposite at the Joints; these are covered on their under Side with a soft hairy Down, of a yellowish Colour. The Flowers are produced in loose Panicles at the End of the Branches, and of a pale yellow Colour, shaped like those of the Foxglove; these are succeeded by flat Pods a Foot long, having a Border on each Side, and contain two Rows of flat winged Seeds.

This Plant is tender, so must be constantly kept in the Bark Stove, and treated as the 4th Sort. It is propagated by Seeds, which must be obtained from the Country where it grows naturally, for it doth not produce any in England.

The 15th Sort was sent me from *La Vera Cruz*. This hath a woody Stem covered with an Ash-coloured Bark, which rises to the Height of 10 Feet, sending out many Side Branches, garnished with trifoliate Leaves, placed opposite at each Joint, which are very smooth, oval, and ending in Points. The Flowers come out at the Extremity of the Branches in loose Panicles, and are of a dirty white Colour. These are succeeded by flat narrow Pods, containing two Rows of flat winged Seeds.

This Sort is propagated by Seeds, which must be sown on a hot Bed, and the Plants treated as the 4th Sort; it must constantly remain in the Bark Stove.

BIHAL. See Musa.

BINDWEED. See Convolvulus.

BIRCH TREE. See Betula.

BISCUTELLA. L. G. Pl. 724. *Tblaspidium*. Tourn. Buckler Mustard, or Bastard Mithridate Mustard.

The Characters are,

The Empalement is composed of four Leaves, which are pointed. The Flower hath four Petals, placed in Form of a Cross, which are obtuse and spread open; it hath six Stamina, four long and two short, placed opposite, having single Summits. In the Center is situated an orbicular compressed Germen, supporting a single permanent Style, crowned with an obtuse Stigma; the Germen becomes a plain compressed erect Capsule, with two convex Lobes, having two Cells, terminated by the rigid Style, which is joined to the Side of the Partition, each Cell containing one compressed Seed.

The Species are,

1. BISCUTELLA calycibus nectario utrinque gibbis, filiculis in stylum coarctatis. Lin. H. C. 329. Buckler Mustard, with the Cup of the Nectarium swelling on each Side, and small Pods joined to the Style. This is the *Tblaspidium hirsutum calyce floribus auriculato*. Bastard Mithridate Mustard, with an auriculated Flower Cup.

2. BISCUTELLA filiculis orbiculato-ditymis a stylo divergentibus. Hort. Cliff. 329. Buckler Mustard, with a double orbicular Pod, diverging from the Style. *Tblaspidium Monspeliense hieracii folio hirsuto*. Tourn. Mithridate Mustard of Montpellier, with a rough Hawkweed Leaf.

3. BISCUTELLA hirsuta foliis oblongis dentatis semi-amplexicaulis floribus spicatis stylo brevior. Hairy Buckler Mustard, with oblong indented Leaves which half embrace the Stalk, Flowers growing in Spikes, and a shorter Style. This is the *Tblaspidium Apuliae spicatum*. Tourn. Inst. Spiked *Tblaspidium* of Apulia.

4. BISCUTELLA foliis lanceolato-linearibus hispida, floribus corymbosis terminalibus. Buckler Mustard, with linear Spear-shaped rough Leaves, and Flowers growing in a Corymbus at the Termination of the Stalk. This is the *Tblaspidium anchusae folio*. Tourn. Inst. 215. Bastard Mithridate Mustard with an Alkanet Leaf.

The 1st Sort grows naturally in the South of France and Italy, where it rises about a Foot high: but in a Garden generally grows 2 Feet high, dividing into several Branches, which at every Joint have one oblong entire Leaf a little indented; those on the lower Part of the Stalk being broader and more obtuse than those on the upper. The Flowers are produced at the Ends of the Branches in loose Panicles, which are composed of four obtuse Petals of a pale yellow Colour; these are succeeded by double round compressed Seed Vessels, swelling in the Middle, where is lodged a single round flat Seed, the Style of the Flower standing upright between the two small Vessels, joined to their Borders.

The 2d Sort grows naturally in the South of France, Italy, and Germany, from whence I received the Seeds, and dried Samples of the Plant, which are not more than 6 Inches high, though they are the entire Plants with their Roots, but in the Garden they grow 2 Feet high. This hath many long narrow Leaves, spreading near the Ground, which are deeply indented on each Side, resembling those of Hawkweed, and are hairy; from the Center arises the Stalk, which divides upward into many smaller, having no Leaves on them, and are terminated by loose Panicles of yellow Flowers, composed of four Petals, placed in form of a Cross. These are succeeded by round compressed Seed Vessels like the former, but are smaller, and the Style of the Flowers bends from them.

The 3d Sort sends out many oblong hairy Leaves, which are slightly indented on their Edges, from among these there arises a hairy branching Stalk, which grows 2 Feet high, and at each Joint is placed one oblong indented Leaf, which half embraces the Stalk at their Base; each Branch is terminated by a close Spike of pale yellow Flowers, which are succeeded by round compressed Seed Vessels like the other Sorts, but the Style of the Flower, which is joined to them, is shorter than those of the other Species.

The 4th Sort grows naturally in Spain and Sicily. This seldom rises more than a Foot high; the Leaves at the Bottom grow upright, they are near 4 Inches long, narrow, stiff, and set on every Side with rough prickly Hairs. The Stalk is single, seldom putting out any side Branches, and naked, having no Leaves. The Flowers are produced in compact Clusters at the End of the Branches, which are of a deep yellow Colour, and shaped like those of the other Species, as are also the Seed Vessels, but smaller.

All these Sorts are annual Plants, which perish soon after they have perfected their Seeds. These should be sown either in Spring, or Autumn, on a Border of light Earth, in an open Situation, where they are to remain. Those which are sown in Autumn will come up in about three Weeks, and the Plants will live through the Winter without any Protection, so will flower earlier the following Summer, whereby good Seeds may always be obtained, whereas those which are sown in Spring, in bad Seasons decay before their Seeds are ripe. The autumnal Plants

Plants flower in June, and the Spring in July, their Seeds ripen about six Weeks after, which is permitted to scatter, Plenty of young Plants will be produced without any Care.

These require no farther Culture, but to keep them clean from Weeds, and thin the Plants where they are too close, leaving them eight or nine Inches asunder. They are preserved in the Gardens of the curious in Botany, but have no great Beauty to recommend them. I have cultivated these Sorts many Years, and have never observed either of them to vary, therefore make no Doubt of their being distinct Species.

BISERRULA. Lin. G. P. 800. *Pelecinus*. Tourn.

The Characters are,

The Flower hath a tubulous Empalement of one Leaf, erect, and slightly indented at the Top in five Parts, which are equal, the two upper standing at a Distance. The Flower is papilionaceous, having a large roundish Standard, whose Edges are reflexed. The Wings are oblong, but shorter than the Standard; and the Keel is of the same Length with the Wings, obtuse, and bending upward. It hath ten Stamina, nine of which are joined, and the other single, with their Ends pointing upward. In the Center is situated an oblong compressed Germen, supporting an Awl-shaped Style, crowned by a single Stigma; these are included in the Keel. The Germen becomes a flat narrow Pod, indented on both Edges like the Saw of the Sword Fish, having two Cells, filled with Kidney-shaped Seeds.

We have but one Species of this Genus, which is,

BISERRULA. Hort. Cliff. 361. We have no English Name for this Plant. It is the *Pelecinus vulgaris*. Tourn. Inst. 417. Common *Pelecinus*, and the *Securidaca filiquis planis utrinque dentatis*. C. B. P. 349. Hatched Vetch with plain Pods, indented on each Side.

This is an annual Plant, which grows naturally in Italy, Sicily, Spain, and the South of France. It sends out many angular Stalks, which trail on the Ground, and are subdivided into many Branches, which are garnished with long winged Leaves, composed of many Pair of Lobes, and terminated by an odd one; these are Heart-shaped; toward the upper Part of the Branches come out the Pedicle of the Flowers, which sustains several small Butterfly Flowers, of a purplish Colour, collected together, which are succeeded by plain Pods, about one Inch long, indented on both Sides the whole Length, divided in the Middle by a longitudinal Nerve, containing two Rows of Kidney-shaped Seeds.

It is propagated by Seeds, which should be sown in Autumn, on a Bed of light Earth, where the Plants will come up in about three Weeks, and live in the open Air very well. These should be sown where they are designed to remain, or transplanted very young; for when they are large, they will not bear removing. When the Plants come up, they require no other Care, but to keep them clean from Weeds, and where too near, they should be thinned to about a Foot Distance. They flower in June, and the Seeds ripen in September.

The Seeds of this Plant may also be sown in Spring, and treated in the same Manner as before directed; but these will not flower till the Middle of July, so that unless the Autumn proves warm, they will not ripen Seeds; for which Reason I have directed their being sown in the Autumn, as soon as they are ripe. Two or three of these

Plants may be allowed a Place in Gardens for Variety; but they have not much Beauty.

BISLINGUA. See *Ruscus*.

BISTORTA. Bistort, or Snakeweed.

There are three different Species of this Plant, which are found wild in England; but as they are seldom planted in Gardens, I shall pass them over with only mentioning the common Sort which is used in Medicine.

BISTORTA major, radice minus intortâ. C. B. The common great Bistort, or Snakeweed.

This Genus is joined to the *Polygonum* by Dr. *Linnaeus*, who titles it *Polygonum caule simplicissimo monostachyo foliis ovatis in petiolum decurrentibus*. Mat. Med. 188.

This Plant flowers in May, and if the Season proves moist, will continue to produce new Spikes of Flowers till August: It may be propagated by planting the Roots in a moist shady Border, either in Spring or Autumn, which will soon furnish the Garden with Plants, for it greatly increases by its creeping Roots.

The Roots of this Plant have been recommended for Tanning Leather, but the Trouble of procuring a sufficient Quantity is too great to answer the Intention.

BIXA. Lin. Gen. Plant. 581. *Urucu*. Sloan. Cat. Jam. Orleana. H. L. Mitilla. Tourn. Inst. 242. Anotta, by the French, Roucou.

The Characters are,

It hath a plain small obtuse Empalement, which is permanent; the Flower hath a double Series of Petals, the outer consisting of five, which are large, oblong, and equal, the inner of the same Number and Shape, but narrower. It hath a great Number of bristly Stamina, which are but half the Length of the Petals, and terminated by erect Summits. In the Center is situated an oval Germen, supporting a slender Style of the same Length with the Stamina, and crowned by a bifid compressed parallel Stigma. The Germen afterward becomes an oval Heart shaped Capsule, a little compressed, covered with sharp Bristles, opening with two Valves, with one Cell, and filled with angular Seeds, adhering to a linear Receptacle, which runs longitudinally through the Capsule.

We have but one Species of this Genus, viz.

BIXA. Hort. Cliff. 211. The Anotta, or Arnotta. This is the *Mitella Americana maxima tinctoria*. The greatest American dying Mitella, and the *Acibisti* of Hernandez.

This Shrub grows naturally in the warm Parts of America, where it rises with an upright Stem, to the Height of 8 or 10 Feet, sending out many Branches at the Top, forming a regular Head. These are garnished with Heart-shaped Leaves ending in a Point, which have long Foot Stalks, and come out without any Order. The Flowers are produced in loose Panicles at the End of the Branches; these are of a pale Peach Colour, having large Petals, and a great Number of bristly Stamina of the same Colour, in the Center. After the Flower is past, the Germen becomes a Heart-shaped, or rather a Mitre-shaped Seed Vessel, covered on the Outside with Bristles, opening with two Valves, and filled with angular Seeds, covered with a red Pulp or Paste, which colours the Hands of those who touch it, and is collected for the Use of Dyers and Painters.

This Plant is propagated by Seeds, which are annually brought from the *West-Indies*. These should be sown in a small Pot, filled with light rich Earth, and plunged into

into a hot Bed of Tanners Bark; where, if the Bed is of a proper Temperature of Heat, the Plants will appear in about a Month: When these are about an Inch high, they should be shaken out of the Pot and carefully separated, so as not to tear off their tender Roots, and each planted in a small Pot filled with some rich light Earth, and plunged into a fresh hot Bed of Tanners Bark, observing to shade them every Day until they have taken new Root; after which they must be treated as other tender Plants from the same Country, by admitting fresh Air to them in Proportion to the Warmth of the Season; and when the Heat of the Tan declines, it should be turned up to the Bottom, and, if necessary, some fresh Tan added to renew the Heat. The Plants must be refreshed three Times a Week with Water in Summer, but they must not have it in great Quantities, for their Roots often rot with much Wet. If the Plants are raised early in the Spring, and properly managed, they will be a Foot and a Half high by the Autumn, when they should be removed into the Bark Stove, and plunged in the Tan Bed. During the Winter, they must have but little Water, and while the Plants are young, they must have a good Share of Warmth, otherwise they are very subject to cast their Leaves, and frequently lose their Tops, which renders them unsightly. They must be constantly kept in the Bark Stove, for those Plants which have been placed in a dry Stove, have never made much Progress. I have had many of these Plants 7 or 8 Feet high, with strong Stems and large Heads, but have only had one produce Flowers; nor have I heard of its flowering in any of the Gardens in *Europe*, for in the *Dutch* Gardens they have no Plants of any Size.

The Paste which surrounds the Seeds is taken off by steeping the Seeds in hot Water, and with the Hands washed until the Seeds are clean, then after pouring away the Water, the Sediment is left to harden, which is made up in Balls, and sent to *Europe*, where it is used in dying and painting. It is also used by the *Americans* to dye their Chocolate, and the Natives used to paint their Bodies with it when they went to the Wars.

BLADDER NUT. See *Staphylea*.

BLATTARIA. See *Verbasum*.

BLIGHTS.

There is nothing so destructive to a Fruit Garden as Blights; nor is there any Thing in the Business of Gardening which requires more of our serious Attention, than the endeavouring to prevent or guard against this great Enemy of Gardens.

In order to remedy this Evil, it will be necessary first to examine the true Causes of Blights, so far as we have been enabled to judge from repeated Observations and Experiments.

1. Blights are often caused by a continued dry Easterly Wind for several Days together, without the Intervention of Showers, or any Morning Dew, by which the Perspiration in the tender Blossoms is stopped, so that in a short Time their Colour is changed, and they wither and decay; and if it so happen, that there is a long Continuance of the same Weather, it equally affects the tender Leaves; for their perspiring Matter is hereby thickened and rendered glutinous, closely adhering to the Surface of the Leaves, and becomes a proper Nutrient to those small Insects, which are always found preying

upon the Leaves and tender Branches of Fruit Trees whenever this Blight happens; but it is not these Insects which are the first Cause of Blights, as hath been imagined by some; though it must be allowed, that whenever these Insects meet with such a proper Food, they multiply exceedingly, and are instrumental in promoting the Distemper; so that many times, when the Season proves favourable to them, and no proper Care hath been taken to prevent their Mischief, it is surprising to think how whole Walls of Trees have suffered by this Infection.

The best Remedy for this Distemper, that I have yet known succeed, is, gently to wash and sprinkle over the Trees, from time to time, with common Water (that is, such as hath not had any Thing steeped in it); and the sooner this is performed (whenever we apprehend Danger), the better; and if the young and tender Shoots seem to be much infected, wash them with a woollen Cloth, so as to clear them, if possible, from all this glutinous Matter, that their Respiration and Perspiration may not be obstructed; and if we place some broad flat Pans or Tubs of Water near the Trees, that the Vapours exhaled from it may be received by the Trees, it will keep their tender Parts in a ductile State, and greatly help them; but whenever this Operation of washing the Trees is performed, it should be early in the Day, that the Moisture may be exhaled before the Cold of the Night comes on; especially if the Nights are frosty: nor should it be done when the Sun shines very hot upon the Wall, which would be subject to scorch up the tender Blossoms.

Another Cause of Blights in the Spring is, sharp hoary Frosts, which are often succeeded by hot Sunshine in the Day Time; which is the most sudden and certain Destroyer of Fruits that is known; for the Cold of the Night starves the tender Parts of the Blossoms, and the Sun rising hot upon the Walls before the Moisture is dried from the Blossoms (which, being in small Globules, collects the Rays of the Sun), a scalding Heat is thereby acquired; which scorches the tender Flowers, and other Parts of Plants.

But that Blights are frequently no more than an inward Weakness or Distemper in Trees, will evidently appear, if we consider how often it happens, that Trees against the same Wall, exposed to the same Aspect, and equally enjoying the Advantages of Sun and Air, with every other Circumstance which might render them equally healthy, yet very often are observed to differ greatly in their Strength and Vigour; and as often we observe the weak Trees to be continually blighted, when the vigorous ones, in the same Situation, shall escape very well; which must, therefore, in a great Measure, be ascribed to their healthy Constitution. This Weakness, therefore, in Trees, must proceed either from a want of a sufficient Supply of Nourishment to maintain them in perfect Vigour, or from some ill Qualities in the Soil where they grow, or, perhaps, from some bad Quality in the Stock, or inbred Distemper of the Buds or Cyons, which they had imbibed from their Mother Tree, or from Mismanagement in the Pruning, &c. all which are productive of Distempers in Trees, and of which they are with Difficulty cured. Now, if this is occasioned by a Weakness in the Tree, we should endeavour to trace

out the true Cause; first, whether it has been occasioned by ill Management in the pruning; which is too often the Case; for how common is it to observe Peach Trees trained up to the full Length of their Branches every Year, so as to be carried to the Top of the Wall in a few Years after planting, when at the same Time the Shoots have been so weak, as scarcely to have Strength to produce their Flowers: But this being the utmost of their Vigour, the Blossoms fall off, and, many times, the Branches decay, either the greatest Part of their Length, or quite down to the Place where they were produced; and this, whenever it happens to be the Case, is ascribed to a Blight.

Others there are, who suffer their Trees to grow just as they are naturally disposed; during the Summer Season, without stopping of Shoots, or disburdening their Trees of luxuriant Branches; by which Means two, three, or four Shoots shall exhaust the greatest Part of the Nourishment of the Trees all the Summer; which Shoots, at the Winter pruning, are entirely cut out; so that the Strength of the Tree was employed only in nourishing useless Branches, while the Fruit Branches are thereby rendered so weak, as not to be able to preserve themselves. The Remedies to this Evil shall be explained in the Article of pruning Peach Trees, &c.

But if the Weakness of the Tree proceeds from an inbred Distemper, it is the better way to remove the Tree at first; and after renewing your Earth, plant a new one in its Place.

But there is another Sort of Blight, against which it is very difficult to guard our Fruit Trees; this is sharp pinching frosty Mornings, which often happen at the Time when the Trees are in Flower, or while the Fruit is very young, and occasion the Blossoms or Fruit to drop off; and, sometimes, the tender Parts of the Shoots and Leaves are greatly injured thereby.

The only Method yet found out to prevent this Mischief, is, by carefully covering the Walls, either with Mats, Canvas, Reeds, &c. which being fastened so as not to be disturbed with the Wind, and suffered to remain on during the Night, and taking them off every Day, if the Weather permits, is the best and surest Method that hath yet been found successful; which altho' it has been slighted, and thought of little Service by some, yet the Reason of their being not so serviceable as has been expected, was, because they have not been rightly used, either by suffering the Trees to remain too long covered; by which Means, the younger Branches and Leaves have been rendered too weak to endure the open Air, when they are exposed to it; which has often proved of worse Consequence to Trees, than if they had remained entirely uncovered, or by incautiously exposing them to the Air, after having been long covered.

Whereas, when the Covering before-mentioned has been performed as it ought to be, it has proved very serviceable to Fruits; and many times, when there has been almost a general Destruction of Fruits in the neighbouring Gardens, there has been Plenty of them in such Places where they have been properly covered: And though the trouble may seem to some very great, yet, if these Coverings are fixed near the upper Part of the Wall, and are fastened to Pullies, so as to be drawn up, or let down, it will be soon and easily performed; and the Success will sufficiently repay the Trouble.

BLITUM. Lin. Gen. Plant. 14. *Cenopodio-morus* Boerb. Ind. *Morocarpus* Rupp. Strawberry Blite.

The Characters are,

It hath a tripartite spreading Empalement, which is permanent; the Flower hath no Petals, but one bristly Stamina the Length of the Empalement, with a double Summit; in the Center is situated an oval pointed Germen supporting two Styles, the Length of the Stamina, with a single Stigma. The Empalement becomes an oval compressed Capsule, including one globular compressed Seed, the Size of the Capsule.

The Species are,

1. BLITUM capitellis spicatis terminalibus. Hort. Upsal. Blite with Spikes terminated by little Heads. This is the *Cenopodio-morus major*. Boerb. And the *Atriplex baccifera*. Raii Hist. 197. Berry bearing *Atriplex*, commonly called Strawberry Blite, or Strawberry Spinach.

2. BLITUM capitellis sparsis lateralibus. Hort. Upsal.

3. Blite with small Heads growing scatteringly from the Sides of the Stalks. This is the *Cenopodio-morus minor*. Boerb. Ind. alt. 2. 91. And the *Atriplex Sylvestris mori fructu*. C. B. P. Wild *Atriplex* with a Mulberry Fruit.

3. BLITUM foliis triangularibus acute dentatis, capitellis simplicibus lateralibus. Blite with triangular Leaves, sharply indented, and single Heads, proceeding from the Sides of the Stalks. *Blitum fragiferum*, maximum polyspermum. Amman. Greatest many seeded Strawberry Blite.

The 1st Sort grows naturally in Spain and Portugal, but hath been long preferred in the English Gardens. This is an annual Plant which hath Leaves somewhat like those of Spinach; the Stalk rises about a Foot and half high, the lower Part of which is garnished with Leaves of the Shape with those at Bottom, but smaller, the upper Part of the Stalk hath Flowers coming out in small Heads, at every Joint, and is terminated by a small Cluster of the same: After the Flowers are past, the little Heads swell to the Size of Wood Strawberries, and when ripe have the same Appearance, being very succulent, and full of a purple Juice, which stains the Hands of those who bruise them of a deep purple Colour.

The 2d Sort grows naturally in the South of France and Italy. This seldom grows more than a Foot high, with smaller Leaves than the first, but of the same Shape; the Flowers are produced at the Wings of the Leaves, almost the Length of the Stalk, which are small, and collected in little Heads, shaped like those of the first, but smaller and not so deeply coloured.

The Seeds of the 3d Sort were sent me by the late Dr. Amman, Professor of Botany at Petersburg, who had them from Tartary, where it grows naturally. This rises near 3 Feet high; the Leaves are triangular, ending in very acute Points, as do also the Indentures on the Edges of the Leaves. The Flowers come out from the Wings of the Leaves, in small Heads, which are succeeded by Berries of the same Shape and Colour as those of the 1st, but are smaller. This Sort differs from the 1st in the Shape and Indentures of the Leaves, and in having Leaves placed between the Berries, the whole Length of the Stalk, which is not terminated by Heads, as the 1st, but hath Leaves above the Heads.

These are all of them annual Plants, which will drop their Seeds if permitted, and the Plants will come up in Plenty the following Spring: Or if the Seeds of either of the Sorts are sown in March or April, upon a Bed of

common Earth, in an open Situation, the Plants will come up in a Month or five Weeks after; and, if they are to remain in the Place where they are sown, will require no other Care but to keep them clear from Weeds, and to thin them out, so as to leave them 6 or 8 Inches apart: In July the Plants will begin to shew their Berries, when they make a pretty Appearance: Many People transplant these into the Borders of their Flower Gardens; and others plant them in Pots, to adorn Court Yards, or to place upon low Walls, among other annual Flowers.

When these Plants are to be removed, they should be transplanted before they shoot up their Flower Stems; for they will not bear transplanting well afterward: And if they are planted in Pots, they will require to be duly watered in dry Weather, otherwise the Plants will wither, and not grow to any Size: And, as the Flower Stems advance, they should be supported by Sticks; for if they are not, the Branches will fall to the Ground, when the Berries are grown pretty large and weighty.

BLOODWORT. See *Lapathum*.

BOCCONIA.

So called after the Reverend Paul Boccone, of Sicily, who has published some curious Books of Botany.

The Characters are,

The Flower hath an Empalement, composed of two oval obtuse concave Leaves, and hath four narrow Petals, with a great Number of very short Stamina, crowned by erect Summits, the Length of the Empalement. In the Center is situated a roundish Germen, contracted at both Ends, supporting a single Style, which is bifid at the Top, and crowned by a single Stigma. The Germen becomes an oval Fruit, contracted at both Ends, and a little compressed, having one Cell, full of Pulp, including a single round Seed.

We know but one Species of this Genus, which is, *Boeconia*. *Lin. Sp. Plant.* 505. This is the *Boeconia racemosa*, *sphondylii folio tomentoso*. *Plum. Nov. Gen.* Branching *Boeconia*, with a woolly Cow Parsnep Leaf.

This is called, by Sir Hans Sloane, in his Natural History of Jamaica, *Cbelidonium majus arboreum, foliis quercinis*: Greater Tree Celandine, with Oak Leaves.

It is very common in Jamaica, and several other Parts of America, where it grows to the Height of 10 or 12 Feet; having a strait Trunk, as large as a Man's Arm, which is covered with a white smooth Bark. At the Top it divides into several Branches, on which the Leaves are placed alternately. These Leaves are 8 or 9 Inches long, and 5 or 6 broad; are deeply sinuated, sometimes almost to the Mid-rib, and are of a fine glaucous Colour; so that this Plant makes a beautiful Variety among other exotick Plants in the Stove. The whole Plant abounds with a yellow Juice, like the greater Celandine; which is of an acrid Nature; so that it is used by the Inhabitants of America, to take off Warts, and Spots from the Eyes.

It is propagated by Seeds, which should be sown in a Pot filled with light fresh Earth, early in the Spring, and plunged into a hot Bed of Tanners Bark; observing to water it now and then gently, otherwise the Seeds will not grow. When the Plants are come up, they should be each transplanted into separate small Pots filled with light sandy Earth, and plunged into the hot Bed again; observing to shade the Glasses in the Heat of the Day, until the Plants have taken Root. You must also refresh

them gently with Water; but it should be done sparingly while they are young; for their Stems, being very tender, and full of Juice, will rot, if they receive too much Moisture; but after their Stems are become woody, they will require it often, especially in hot Weather; when they should have a large Share of Air, by raising the Glasses of the hot Bed. The Plants, in two Months after transplanting, will have filled these small Pots with their Roots; therefore they should be shaken out of them, and planted into Pots one Size larger filled with light fresh Earth, and plunged into the Bark Stove, where they should have a good Share of fresh Air in warm Weather. With this Management, I have raised these Plants upward of 2 Feet high in one Season, with very strong Stems. These Plants must be constantly kept in the Stove, being too tender to thrive in the Green House. This Plant has flowered in the Physick Garden at Chelsea, and perfected Seeds; but if it were not to flower, the singular Beauty of the Plant renders it worthy of a Place in every curious Collection of Plants: *Hernandez* tells us, the Indian Kings planted it in their Gardens.

BOERHAAVIA. This Genus was so named by *Monf. Vaillant*, Professor of Botany at Paris, in Honour of the famous Dr. *Boerhaave*, who was Professor of Botany, Chemistry, and Physick, in the University of Leyden.

The Inhabitants of the West-Indies, where these Plants are Natives, give them the Name of Hogweed; and ascribe to them many excellent Virtues.

The Characters are,

The Flower hath no Empalement, and but one Bell-shaped Petal, which is pentangular and entire. It hath in some Species one, and in others two short Stamina, crowned by a double globular Summit. The Germen is situated below the Receptacle, supporting a short slender Style, with a kidney-shaped Stigma; the Germen becomes a single oblong Seed.

The Species are,

1. *BOERHAAVIA caule erecto*. *Lin. Sp. Plant.* 3. *Boerhaavia* with an erect Stalk. This is the *Boerhaavia Solanifolia erecta glabra, floribus carnis laxis dispositis*. *Houff. Mss.* Smooth upright *Boerhaavia*, with a Nightshade Leaf, and Flesh-coloured Flowers disposed in loose Spikes.

2. *BOERHAAVIA caule diffuso*. *Lin. Sp. Plant.* *Boerhaavia* with a diffused Stalk. *Boerhaavia Solanifolia major*. *Vail.* Greater *Boerhaavia* with a Nightshade Leaf.

3. *BOERHAAVIA caule scandente*. *Lin. Sp. Plant.* 3. *Boerhaavia* with a climbing Stalk. *Boerhaavia Alsines folio scandens, floribus pallide luteis majoribus in umbellamodum dispositis semine aspero*. *Houff. Mss.* Climbing *Boerhaavia* with a Chickweed Leaf, large, pale, yellow Flowers, disposed in form of an Umbel, and a rough Seed.

4. *BOERHAAVIA foliis ovatis, floribus lateralibus compactis, caule hirsuto procumbente*. *Boerhaavia* with oval Leaves, Flowers coming from the Wings of the Leaves in close Heads, and a hairy trailing Stalk. *Boerhaavia Solanifolia procumbens & hirsuta floribus coccineis compactis*. *Houff.* Trailing *Boerhaavia* with hairy Stalks, a Nightshade Leaf, and scarlet Flowers growing close.

The 1st Sort was discovered by the late Dr. *Houffon*, at La Vera Cruz, in 1731, from whence he sent the Seeds to England, which succeeded in the Garden at Chelsea. This rises with an upright smooth Stalk, 2 Feet high, and each Joint hath two oval pointed Leaves growing opposite, upon Foot Stalks, an Inch long, of a whitish

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whitish Colour on their under Side. At the Joints, which are far asunder, come out small Side Branches, growing erect; these, also the large Stalk, are terminated by loose, Panicles of Flesh-coloured Flowers, each succeeded by oblong glutinous Seeds.

The Seeds of the 2d Sort were sent me by the same Gentleman from *Jamaica*, where it grows naturally. This sends out many diffused Stalks, a Foot and a half long, which are garnished with small roundish Leaves at each Joint. The Flowers grow very scatteringly upon long branching Foot Stalks from the Wings of the Leaves, also at the End of the Branches, of a pale red Colour, and are succeeded by Seeds like the former.

The 3d Sort was sent me with the former. This sends out several Stalks from the Root, which divide into many Branches, and trail over whatever Plants grow near them, and rise to the Height of 5 or 6 Feet; and are garnished with Heart-shaped Leaves, growing by Pairs opposite at each Joint upon long Foot Stalks, which are of the Colour and Consistence of those of the greater Chickweed. The Flowers grow in loose Umbels at the Extremity of the Branches, they are yellow, and succeeded by small oblong viscous Seeds.

The 4th Sort was sent me with the two former; this sends out many trailing hairy Stalks, which divide into smaller Branches, garnished with oval Leaves at every Joint; and at the Wings of the Leaves come out the naked Foot Stalks, sustaining a small close Head of scarlet Flowers, which are very fugaceous, seldom standing more than half a Day before their Petals drop; these are succeeded by short oblong Seeds.

The 1st, 2d, and 4th Sorts are annual Plants, which decay in Autumn, but the 3d Sort is perennial. They are all tender, so will not thrive in the open Air in *England*; they are propagated by Seeds, sown on a hot Bed in Spring; and when the Plants are fit to remove, they should be each planted in a small Pot and plunged into the hot Bed, and treated as other tender Exoticks. When they are grown too tall to remain under the common Frame, a Plant or two of each Sort should be placed in the Stove, the other may be turned out of the Pots, and planted in a warm Border, where, if the Season proves warm, they will perfect their Seeds, but as these are subject to fail in cold Seasons, those in the Stove will always ripen their Seeds in Autumn; the 3d Sort may be preserved in a warm Stove two or three Years.

BOMBAX. *Lin. Gen. Plant.* 580. *Ceiba. Plum. Nov. Gen.* 32. Silk Cotton Tree.

The Characters are,

It hath a permanent Empalement of one Leaf, Bell-shaped, erect, and quinquefid. The Flower is quinquefid and spreading, the Segments are oval and concave. It hath many Awl-shaped Stamina, the Length of the Petal, crowned with oblong incurved Summits; in the Center is situated the round Germen, supporting a slender Style the Length of the Stamina, with a round Stigma. The Empalement afterward becomes a large oblong turbinated Capsule, having five Cells, opening with five Valves, which are ligneous, containing many roundish Seeds, wrapped in a soft Down, and fixed to a free cornered Column.

The Species are,

1. **BOMBAX** *foliis digitatis caule aculeato. Lin. Sp. Plant.* 511. Silk Cotton with fingered Leaves, and a prickly Stalk.

2. **BOMBAX** *foliis digitatis caule inermi. Lin. Sp. Plant.* Silk Cotton with fingered Leaves, and a smooth Stalk.

3. **BOMBAX** *foliis quinque-angularibus villosis, caule geniculato herbaceo.* Silk Cotton with five-cornered hairy Leaves, and a jointed herbaceous Stalk.

The 1st and 2d Sorts grow naturally in both *Indies*, where they arrive to a great Magnitude, being some of the tallest Trees in those Countries; but the Wood is very light, and not much valued, except for making Canoes, which is the chief Use made of it. Their Trunks are so large, as when hollowed, to make very large ones. In *Columbus's* first Voyage it is reported, there was a Canoe seen at the Island of *Cuba*, made of the hollowed Trunk of one of these Trees, which was 95 Palms long, and of a proportional Width, which would contain 150 Men. Some modern Writers have affirmed, that there are Trees of these Sorts, now growing in the *West-Indies*, so large, as not to be fathomed by 16 Men, and so tall as that an Arrow cannot be shot to their Top.

These Trees generally grow with very strait Stems; those of the 1st Sort are closely armed with short strong Spines; but the 2d hath very smooth Stems, which in the young Plants are of a bright green, but after a few Years, they are covered with a grey, or ash coloured Bark, which turns to a brown as the Trees grow older. They seldom put out any Side Branches till they arrive to a considerable Height, unless their leading Shoot is broken or injured. The Branches toward their Top are garnished with Leaves composed of five, seven, or nine oblong smooth little Leaves, which are Spear-shaped, and join to one Center at their Base, where they adhere to the long Foot Stalk. These fall away every Year, so that for some Time the Trees are naked, and, before the new Leaves come out, the Flower Buds appear at the End of the Branches, and soon after the Flowers expand, which are composed of five oblong purple Petals, with a great Number of Stamina in the Center; when these fall off, they are succeeded by oval Fruit, as large as a Swan's Egg, having a thick ligueous Cover, which, when ripe, opens in five Parts, and is full of a dark short Cotton, inclosing many roundish Seeds, as large as small Pease.

The Down which is inclosed in these Seed Vessels is seldom used, except by the poorer Inhabitants to stuff Pillows, or Chairs, but it is generally thought to be unwholesome to lie upon.

There was a few Years past, a fine Plant of another Sort in the Garden of the late Duke of *Richmond*, at *Goodwood*, which was raised from Seeds which came from the *East-Indies*. The Stem of this was very strait and smooth; the Leaves were produced round the Top, upon very long Foot Stalks, each being composed of seven or nine long, narrow, silky, small Leaves, joined at their Base to the Foot Stalk, in the same Manner as those of the two former, but they were much longer, and reflexed backward, so that at first Sight it appeared very different from either of them.

The 3d Sort was sent me from the *Spanish West-Indies*, where it grows naturally; the Plants which have been raised here, have soft herbaceous Stalks very full of Joints, and do not appear as if they would become woody, for the Plants of several Years Growth have

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soft pithy Stems. The Leaves come out on long hairy Foot Stalks at the Top of the Plants; these have the Appearance of those of the Mallow Tree, but are larger, and of a thicker Consistence, and on their under Side are covered with a short, brown, hairy Down, and are cut on their Edges into five Angles. These Plants have not as yet flowered in England, nor have I received any Information what Flowers they produce, but by the Pods and Seeds, it appears evidently to be of this Genus. The Down inclosed in these Pods is of a fine purple Colour, and I have been informed that the Inhabitants of the Countries where the Trees grow naturally, spin and work it into Garments, which they wear without dying any other Colour.

I received a few Years since, a few Pods of another Sort from Panama, which were not so large as those of the common, but were rounder. The Down of these was red, but the Plants raised from the Seeds were so like those of the 3d Sort, as not to be distinguished from them, so I doubt of their being distinct Species. I also received some Seeds from Siam, which produced Plants of the same Kind, so that these Trees may be common to many of the hot Countries.

The Plants are propagated by Seeds, which must be sown on a hot Bed in Spring; if the Seeds are good, the Plants will appear in a Month, and those of the two 1st Sorts will be strong enough to transplant in a Month after; when they should be each planted in a small Pot, filled with fresh loamy Earth, and plunged into a moderate hot Bed of Tanners Bark, being careful to shade them from the Sun, till they have taken fresh Root, after which they should have a large Share of Air admitted to them when the Weather is warm, to prevent their being drawn up weak; they must also be frequently refreshed with Water, which must not be given in large Quantities, especially the 3d Sort, whose Stalks are very subject to rot with much Moisture. In this Bed they may remain till Autumn (provided there is room for the Plants under the Glasses) but if the Heat of the Bed declines, the Tan should be stirred up, and fresh added to it, and if the Plants have filled the Pots with their Roots, they should be shifted into Pots a little larger; but there must be care taken not to over-pot them, for nothing is more injurious to these Plants, than to be put into large Pots, in which they will never thrive. In Autumn they must be removed into the Bark Stove, where they must constantly remain, being too tender to thrive in this Country, in any other Situation. In Winter they must have but little Wet, especially if they cast their Leaves; but in the Summer they should be frequently refreshed with Water, and in warm Weather must have Plenty of fresh Air admitted to them. With this Management the Plants will make great Progress, and in a few Years will reach the Glasses on the Top of the Stove, if the Building is not very lofty.

These Plants make an agreeable Variety in a large Stove where they have Room to grow, their Leaves having a different Appearance from most other Plants; but as they are several Years old before they flower, in the Countries where they grow naturally; so there is little Hopes of their producing any in England.

BONDUC. See Guilandina.

BONTIA. Lin. G. P. 709. Barbadoes Wild Olive.

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The Characters are,

The Flower hath a small erect Empalement, which is quinquefid and permanent. The Flower is of the ringent Kind, having a long cylindrical Tube, gaping at the Brim, the upper Lip is erect and indented, the lower Lip trifid and turns backward. It hath four Axul-shaped Stamina, as long as the Petal, and incline to the upper Lip, two of them being longer than the other, and have single Summits. In the Center is situated the oval Germen, supporting a slender Style the length of the Stamina, and crowned by a bifid obtuse Stigma. The Germen afterward becomes an oval Berry with one Cell including a Nut of the same Form.

We have but one Species of this Genus, viz.

BONTIA. Lin. Sp. Plant. Barbadoes Wild Olive. This is the *Bontia arborescens thymelææ facie* Plum. Nov. Gen. 32. Tree-like Bontia resembling Spurge Laurel.

This Plant is greatly cultivated in the Gardens at Barbadoes, for making Hedges; than which there is not a more proper Plant to thrive in those hot Countries, it being an Ever-green, and of quick Growth. I have been informed, that from Cuttings (planted in the rainy Season, when they have immediately taken Root) there has been a complete Hedge, 4 or 5 Feet high, in 18 Months. And as this will very well bear cutting, it is formed into a very close thick Hedge, which makes a beautiful Appearance. In England it is preserved in Stoves, with several curious Plants of the same Country. It may be raised from Seeds, sown on a hot Bed early in the Spring, that the Plants may acquire Strength before Winter, when the Plants come up, they must be transplanted each into a half-penny Pot filled with light fresh Earth, and plunged into a moderate hot Bed of Tanners Bark; observing to water and shade them until they have taken Root; after which, they must have a large Share of Air in warm Weather, and be often refreshed with Water. In Winter they must be placed in the Stove, where they should have a moderate Degree of Warmth, and but little Water during that Season, lest it rot their tender Roots. In Summer they must have a great Share of Air; but will not do well if exposed abroad; so should always remain in the Stove, among Plants which require a great Share of Air; which may be admitted by opening the Glasses in very hot Weather. With this Management, these Plants will produce Flowers and Fruit, in two or three Years, from Seed. They may also be propagated by Cuttings; planted in the Spring, before the Plants have begun to shoot. These must be put into Pots filled with light rich Earth, and plunged into a moderate hot Bed; observing to water and shade them until they have taken Root; after which they must be treated as the seedling Plants. These Plants being ever-green, and growing in a pyramidal Form, make a pretty Variety in the Stove.

BONUS HENRICUS. See Chenopodium.

BORBONIA. Lin. Gen. Plant. 764.

The Characters are,

It hath a turbinated Empalement of one Leaf, cut at the Top into five acute Segments, which are stiff, pungent, and about half the Length of the Petals. The Flower hath five Leaves, and is of the Butterfly Shape. The Standard is obtuse and reflexed. The Wings are Heart-shaped and shorter than the Standard: The Keel hath two obtuse lunulated Leaves. It hath nine Stamina joined in a Cylinder, and

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and one upper standing single turning up its Point. These have small Summits; in the Center is situated an Awl-shaped Germen, supporting a short Style crowned by an obtuse indented Stigma. The Germen becomes a round pointed Pod terminated with a Spine, having one Cell inclosing a Kidney-shaped Seed.

The Species are,

1. *BORBONIA foliis lanceolatis multinerviis integerrimis*. Lin. Sp. Plant. 707. *Borbonia* with entire Spear-shaped Leaves having many Nerves. This is the *Genista Africana frutescens rusci nervosis foliis*. Raii Hist. 3. 107. Shrubby African Broom, with nervous Butchers Broom Leaves.

2. *BORBONIA foliis cordatis multinerviis integerrimis* Lin. Sp. Plant. 707. *Borbonia* with entire Heart-shaped Leaves, having many Nerves. *Spartium Africanum*. Shrubby African Broom, with a Butchers Broom Leaf embracing the Stalk.

3. *BORBONIA foliis lanceolatis trinerviis integerrimis*. Lin. Sp. Plant. 707. *Borbonia* with entire Spear-shaped Leaves, having three Veins.

These Plants grow naturally at the Cape of Good-Hope, from whence I received their Seeds. In the natural Place of their Growth, they rise to the Height of 10 or 12 Feet; but in Europe, they seldom are more than 4 or 5; having slender Stems dividing into several Branches, which are garnished with stiff Leaves, placed alternately; those of the 1st Sort are narrow, long, and end in a sharp Point. The Flowers come out from between the Leaves at the End of the Branches, in small Clusters; these are yellow, and shaped like those of the Broom. It flowers in August and September, but doth not perfect Seeds in England. The 2d Sort hath broader Leaves, the Stalks are slender and covered with white Bark; the Leaves embrace these at their Base, where they are broadest, and are terminated by sharp Points like those of *Knechtolm* or *Butchers Broom*. The Flowers are produced in small Clusters at the End of the Branches, of the same Shape and Colour as the former, but larger. This flowers at the same Time with the former, but never produces Seeds here.

The 3d Sort hath stronger Stalks than either of the former. These are garnished almost their whole Length, as are also the Branches with stiff Spear-shaped Leaves, having three longitudinal Nerves in each; these are placed closer together, than those of the other Species. The Flowers are produced at the Extremity of the Branches, each standing on a separate Foot Stalk. They are of the same Shape and Colour with the former, but are larger.

As these Plants do not perfect Seeds in this Country, they are with Difficulty propagated here. The only Method by which I have yet succeeded, hath been by laying down their young Shoots; but these are commonly two Years laid before they put out Roots fit to be separated from the old Plant. In laying these down, the Joint which is laid in the Ground should be slit upward, as is practised in laying *Carnations*, and the Bark of the Tongue at Bottom taken off. The best Time to lay these down is in the Beginning of September, and the Shoots most proper for this Purpose, are those which come out immediately from the Root, and of the same Year's Growth, not only from their Situation being

near the Ground, but these are also more apt to put out Roots, than any of the upper branches.

But where good Seeds can be procured, that is the more eligible Method of propagating the Plants; for those raised from Seeds make the straightest Plants, and are quicker of Growth. When good Seeds are obtained they should be sown in Pots filled with light loamy Earth, as soon as they are received; which if it happens in the Autumn, the Pots should be plunged into an old Bed of Tanners Bark, under a Frame, where they may remain all the Winter, being careful that they have not much Wet; in Spring the Pots should be plunged into a hot Bed, which will bring up the Plants in five or six Weeks. When these are fit to remove, they should be each planted in a small Pot, filled with the like loamy Earth, and plunged into a moderate hot Bed, observing to shade them until they have taken fresh Root, also to refresh them with Water, as they may require it. After this they must by Degrees be inured to the open Air, into which they must be removed in June, and placed in a sheltered Situation; where they may remain till Autumn, when they must be removed into the Greenhouse, and placed where they may enjoy the Air and Sun; during the Winter Season, these Plants must be sparingly watered; but in Summer, when they are placed abroad, they require to be frequently refreshed, but must not have too much Water at a Time.

These Plants make a pretty Variety in the Greenhouse in Winter, and as they do not require any artificial Heat, they are worthy of a Place in every Garden where there is convenience for keeping them.

BORRAGO Borage.

The Characters are,

The Empalement is divided into five Parts at the Top, and is permanent. The Flower is of one Leaf, having a short Tube, and spread wide open above, being divided into five acute Segments at the Brim. The Chaps of the Flower are crowned by five Prominences, which are obtuse and indented. It hath five Stamina joined together, crowned by oblong Summits. It hath four Germen situated in the Center, and a single Style longer than the Stamina supporting a single Stigma. The four Germen become so many roundish rough Seeds, inserted in the Cavities of the Receptacle and included in the large swollen Empalement.

The Species are,

1. *BORRAGO foliis omnibus alternis, calycibus patentibus* Hort. Upsal. 34. Borage with all the Leaves growing alternate, and a spreading Flower Cup. This is the *Borrigo floribus caeruleis*. J. B. Borage with blue Flowers.

2. *BORRAGO calycibus tubo corollae brevioribus, foliis cordatis* Hort. Cliff. 45. Borage with a Flower Cup, shorter than the Tube of the Flower, and Heart-shaped Leaves. *Borrigo Constantinopolitana flore reflexo caeruleo, calyce vesicareo*. Tourn. Borage of Constantinople with a blue reflexed Flower, and a swelling Flower Cup.

3. *BORRAGO calycis foliolis ovatis acutis erectis* Hort. Cliff. 45. Borage with the Leaves of the Empalement oval, pointed and erect. This is the *Cynoglossum Boraginifolio & facie Aethiopico*. Pluk. Alm. Ethiopian Hounds Tongue with a Leaf and Appearance of Borage.

4. *BORRAGO foliis ramificationum oppositis calycinis foliolis sagittatis*. Lin. Sp. Plant. 137. Borage with opposite Leaves on the Branches, and Spear-shaped Leaves

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to the Flower Cup. This is the *Cynoglossoides folio caulem amplexante*. *Isnard. AA. Scien.* 1718. Bastard Hounds Tongue, with a Leaf embracing the Stalk.

The 1st is the common Borage, whose Flowers are used in Medicine, and the Herb for cool Tankards in Summer. Of this, there are three Varieties which generally retain their Difference from Seeds, one hath a white, another a red Flower, and the third variegated Leaves. These three Variations have continued several Years in the *Chelsea Garden*, with little Alteration, but as they do not differ in any other Respect from the common, I have only mentioned them as Varieties.

This is an annual Plant, which if permitted to scatter its Seeds, the Plants will come up in Plenty, but the Seeds may be sown either in Spring or Autumn, on a Spot of open Ground where the Plants are designed to remain; when they have obtained a little Strength, the Ground should be hoed, to destroy the Weeds, and the Plants must be cut up where they are too near each other, leaving them six or eight Inches asunder. After this they will require no farther Care, unless the Weeds should come up again, then the Ground should be a second time hoed over to destroy them, which if well performed, and in dry Weather, will clear the Ground from Weeds, so it will require no more cleaning till the Borage is decayed. The Plants which are raised in Autumn, will flower in *May*, but those raised in Spring, will not flower till *June*, so that where a Continuation of the Flowers are required, there should be a second Sowing in Spring, about a Month after the first: this should be on a shady Border, and if the Season should prove dry, the Ground must be Watered frequently, to bring up the Plants, this latter Sowing will continue flowering till the End of Summer.

The second sort was sent from *Constantinople*, to the *Royal Garden at Paris*, and communicated from thence to most of the curious Gardens in *Europe*. This is a perennial Plant, having thick fleshy Roots, which spread under the Surface of the Ground, and is thereby propagated with great Facility. It sends out many oblong Heart-shaped Leaves from the Root, without any Order, having long hairy Foot Stalks; from the Root arises the Flower Stem, which is more than two Foot high when fully grown, having at the Joints a single small Leaf without Foot Stalk. The upper part of the Stalk branches out into several small Foot Stalks, terminated by loose Panicles of Flowers, of a pale blue Colour, and the Petal is reflexed backward, so that the connected Stamina and Style are left naked. After the flowers are fallen, the four Germen become so many rough Seeds, smaller than those of the common Borage. It flowers in *March*, and the Seeds ripen in *May*. When the flower Stalk first appears, the Flowers seem collected into a close Spike; some of which do often spread open, before the Stalk is six Inches high; but as the Stalks advance, they divide into many loose Spikes.

It is easily propagated by the Root, which may be parted in Autumn, these should have a dry Soil and a warm Situation, for as the Flower Stalks appear early in the Spring, when they are much exposed they are often killed by the frost; but if these Plants are planted in dry Rubbish, they will not grow too luxuriant, so will not be in Danger of suffering by Frost. Some of

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the Seeds of this have scattered into the Joints of an old Wall in the *Chelsea Garden*: Where the Plants have grown without Care for two Years, and are never injured by Cold or Heat.

The 3d and 4th Sorts grow naturally in *Africa*; these are both annual Plants, and rarely rise a Foot high, having rough Stalks; the Leaves of the 3d Sort are set on by Pairs opposite, with short Foot Stalks, but those of the 4th closely embrace the Stalks at their Base, the Flowers come out on short Foot Stalks, from the Wings of the Leaves, and also at the Top of the Stalks; those of the 3d Sort are white, and those of the 4th a pale yellow; neither of them make any great Appearance, so are seldom cultivated, but in Botanick Gardens for Variety.

If the Seeds of these Plants are sown in Autumn, in a warm Border, the Plants will live thro' the Winter, and flower early the following Summer, so will produce good Seeds; for when they are sown in the Spring, if the Season is not very favourable, they do not perfect their Seeds in *England*. The Seeds should be sown where the Plants are to remain, for they seldom succeed when they are transplanted.

BOSIA. This Name has been given to this Plant in Memory of a curious Botanist at *Leipsick*, of that Name, who had a fine Garden of Plants; this Plant was mentioned in his Catalogue, under the Title of *Frutex peregrinus Yerva-mora distus*. By some of the *English* Gardeners it is called the Golden-rod Tree; but for what Reason, I could never learn.

The Characters are,

The Empalement of the Flower is composed of five Spear-shaped concave Leaves, equal and erect. It hath no Petals, but five Awl-shaped Stamina as long as the Empalement, and crowned by single Summits; in the Center is situated an oval oblong pointed Germen supporting two spreading Styles, crowned by a single Stigma. The Germen becomes a globular Berry with one Cell including one pointed Seed.

We have but one Sort of this Plant; viz.

BOSIA. *Lin. Hort. Cliff.* 84. this is the *Arbor bacifera Canariensis*, *Syringæ ceruleæ foliis, purpurantibus venis, fructu monopyreno Yerva-mora Hispanorum.* *Pluk. Phyl.* Commonly called Golden-red Tree.

This Plant is a Native of the *Canaries*; and it hath been since found in some of the *British* Islands in *America*: It was first brought into *England* from the *Canaries*, and has been long an Inhabitant of the *English* Gardens; but I have not as yet seen any of these Plants in Flower, tho' I have had many old Plants under my Care more than thirty Years: it makes a pretty strong woody Shrub, growing with a Stem as large as a middling Person's Leg; the Branches come out very irregular, and make considerable Shoots in Summer, which should be shortened every Spring, to preserve the Heads of the Plants in any tolerable Order: These Branches retain their Leaves till toward the Spring, when they fall away, and new Leaves are produced soon after: it may be propagated by Cuttings planted in the Spring, and the Plants must be housed in Winter, being too tender to live thro' the Winter, in the open Air, in this Country.

BOSQUETS are little Groves; so called from *Boschetto, Italian*, which is a Diminutive of *Bosco*, a Wood or Grove.

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are formed of Trees, Shrubs, or tall large growing Plants, planted in Quarters; and are either disposed regularly in Rows, or in a more wild or accidental manner, according to the Fancy of the Owner: these Quarters are commonly surrounded with ever-green Hedges, and the Entrance formed into regular Porticos with Yews, which are by far the best and most tonfide Trees for this Purpose. In the Inside of these Quarters may be made some Walks, either strait or winding; which, if the Quarters are large, should be six or eight Feet broad, and may be laid with Turf, and kept well mowed and rolled, which will render the walking much easier and pleasanter than if the Walks are only the common Earth, which in smaller Quarters can't be otherwise, for if the Trees are close, and the Walks narrow, so as to be shaded and over hung by the Trees, the Grass will not grow.

These Quarters may be also surrounded with Hedges of Lime, Elm, Hornbeam, or Beech; which should be kept well sheared, and not suffered to rise too high; that the Heads of the Trees may be fully seen over them, and the Stems only hid from the Sight, when in the Walks on the Outside of the Quarters.

In planting these Bosquets, you should observe to mix the Trees, which produce their Leaves of different Shapes, and various Shades of Green, and hoary or mealy Leaves, so as to afford an agreeable Prospect: besides, there is a great Variety of different Fruits, which these Trees produce in Autumn; which, altho' of little or no Use, that we know of, yet have a very good Effect, in affording an agreeable Variety for some time after the Leaves are gone; as the *Eunonymus*, or Spindle Tree, the *Opulus*, or Marsh Elder, the Cock-spur Hawthorn, with many other Sorts, two numerous to mention in this Place; whose Berries afford Food for the Birds, so that they will be thereby invited to stay and harbour in these little Groves, which by their different Notes, will render these Places very agreeable in the Spring. But I would advise never to mix Ever-greens with deciduous Trees; for, besides the ill Effect it hath to the Sight (especially in Winter), they seldom thrive well together; so that those Quarters where you intend to have Ever-greens, should be wholly planted therewith; and in the other Parts mix as many Varieties of different Trees, which cast their Leaves, as you can conveniently; and also plant some of the largest growing Flowers (especially near the Outside of the Quarters), which will add greatly to the Variety, if they have but Air enough to grow; but if any of the ever-green Trees are mixed with the deciduous, it should be only to border the Wood.

These Bosquets are proper only for spacious Gardens, being expensive in their first making, as also in keeping.

BOTRYS. See *Chenopodium*.

BOX TREE. See *Buxus*.

BRABEJUM, *African Almond*, *vulg.*

This Name was given to this Plant by Dr. *Linnaeus*, who has separated it from the Genus of *Almond* on account of the Shape of the Flower.

The Characters are,

The Flower hath no Emplacement, but is composed of four narrow obtuse Petals which are erect, forming a Tube, but are turned backward at Top; it hath four slender Stamina which are inserted in the Bottom of the Petals. and are of

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the same Length, having small Summits. In the Center is a small hairy Germen, supporting a slender Style, crowned by a single Stigma, the Germen afterward becomes an oval, hairy, dry Berry, inclosing an oval Nut.

We have but one Sort of this Plant, viz.

BRABEJUM. *Hort. Cliff.* This is the *Amygdalus Æthiopica*, *fructu balastrico*. *Breyn. Cent.* *African*, or *Ethiopian Almond*, with a silky Fruit.

This Tree is a Native of the Country about the Cape of Good Hope, from whence it was first introduced into the curious Gardens in Holland, and has since been distributed into many Parts of Europe.

In this Country it seldom grows above eight or nine Feet high; but in its native Soil it is a Tree of middling Growth; but as it must be kept in Pots, or Tubs, in this Country, being too tender to live through the Winter in the open Air, so we cannot expect to see it grow to a great Size.

It rises with an upright Stem, which is soft, and full of Pith within, and covered with a brown Bark. From the Stem are sent out horizontal Branches on every Side, and at every Joint, the lower being the longest, and every Tier diminishing to the Top, so as to form a Sort of Pyramid. The Leaves come out all round the Branches at each Joint, which are from four to five Inches long, and Half an Inch broad in the Middle, of a deep green on their upper Side, but of a pale russet Colour on their under Side, and are indented on their Edges, standing on very short Foot Stalks. The Flowers are produced toward the End of the Shoots, coming out from between the Leaves quite round the Branches, which are of a pale Colour, inclining to white; these appear early in the Spring, and fall away without any Fruit succeeding them in this Country.

This Plant is, with Difficulty, propagated by Layers; these are often two Years before they make Roots strong enough to be taken from the old Plants; when the Branches are laid down, it will be a good Method to slit them at a Joint (as is practised in laying Carnations) which will promote their taking Root.

These must have but little Water given them, especially in Winter, for as the young Shoots are chiefly Pith within, so they are very subject to rot with much Moisture. The best Time to make the Layers is in April, just as the Plants are beginning to shoot, and the Layers must always be made of the former Year's Shoots. As this Plant is very difficult to propagate, so it is very scarce in Europe, there being but few in England, and not many in the Dutch Gardens at present.

The Plants must have a good Green-house in Winter, but in Summer should be set abroad in a sheltered Situation, where they will thrive, and annually produce Flowers in the Spring, so will make a pretty Variety among other exotick Plants in the Green-house.

BRANCA URSINA. See *Acanthus*.

BRASSICA, The Cabbage.

The Characters are,

The Emplacement is composed of four upright Spear-shaped small Leaves, convex at their Base, and fall off. The Flower is Cross-shaped, having four, oval, plain Petals, which spread open, and are entire. It hath four oval nectarious Glands, one being situated on each Side of the short Stamina and Pointal, and one on each Side the longer, and the

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the Empalement. It hath six Stamina, Awl-shaped and erect, two of which are opposite, and the Length of the Empalement, the other four are longer; these have erect pointed Summits. It hath a taper Germen the Length of the Stamina, having a short-Style, thicker than the Germen, and crowned by an entire Stigma. The Germen becomes a long taper Pod, depressed on each Side, and is terminated by the Apex of the intermediate Partition, which divides it into two Cells, filled with round Seeds.

I shall first enumerate the Species, which are distinct, and afterward mention the Varieties, which are cultivated for the Table; for although most of these may be continued distinct by proper Care, without Alteration; yet as they are liable to vary when planted near each other for Seeds, so we must not admit of their being called different Species.

The Species are,

1. *BRASSICA radice caulescente tereti carnosâ. Hort. Cliff. 338.* This is the *Brassica capitata alba. C. B. P. 111.* The common white Cabbage.
2. *BRASSICA radice caulescente orbiculari-carnosa, foliis sessilibus.* This is the *Brassica radice napiformi. Tourn. Inf. R. H. 219.* Turnep-rooted Cabbage.
3. *BRASSICA radice caulescente tereti carnosâ, floralibus multicaulis.* This is the *Brassica Cauliflora. Casp. Bauh. Pin. 111.* The Cauliflower.
4. *BRASSICA radice cauleque tenui ramoso perenni foliis alternis marginibus incis. This is the Brassica maritima arborea sive procerior ramosa. Mor. Hist. 2. p. 208.* Taller shrubby branching Sea Cabbage.
5. *BRASSICA foliis lanceolato-ovatis glabris indivisis dentatis. Hort. Ups. 191.* Cabbage with entire oval Spear-shaped smooth Leaves, which are indented.
6. *BRASSICA foliis oblongo-cordatis amplexicaulibus, integerrimis.* Cabbage with oblong Heart-shaped Leaves embracing the Stalks, which are entire. *Brassica campensis perfoliata flore purpureo. C. B. P. 112.* Campaign Colewort with a thorough Wax Leaf, and a purple Flower.
7. *BRASSICA foliis cordatis semiamplexicaulibus, marginibus dentatis, siliquis tetragonis longissimis.* This is the *Brassica Orientalis perfoliata flore albo siliquâ quadrangulâ. Tourn. Cor. 16.* Eastern perfoliated Colewort with a white Flower and quadrangular Pod.
8. *BRASSICA radice caulescente tereti, foliis inferioribus petiolatis superioribus semiamplexicaulibus.* This is the *Napus Sylvestris. C. B. P. 95.* The wild Navew, or Cole Seed.

The Varieties of the first Sort are,

1. *Brassica sabauda hyberna. Lob. Icon.* The Savoy Cabbage, commonly called Savoy.
2. *Brassica capitata rubra.* The red Cabbage.
3. *Brassica capitata alba.* The Sugar Loaf Cabbage.
4. *Brassica capitata alba præcox.* The early Cabbage.
5. *Brassica peregrina moschum olens.* Musk Cabbage.
6. *Brassica capitata alba minor Muscovitica. H. A.* Small Russia Cabbage.
7. *Brassica capitata alba compressa. Boerb. Ind. Alt. 11.* The large sided Cabbage.
8. *Brassica capitata viridis Sabauda.* Green Savoy.
9. *Brassica fimbriata. C. B. P. 111.* The Borecole.
10. *Brassica fimbriata virescens.* Green Borecole.
11. *Brassica fimbriata Siberica. Boerb. Ind. 2. 12.* Siberian Borecole, called by some Scotch Kale.

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The 2d Sort is undoubtedly a distinct Species, for I have always found the Seeds produce the same, with this Difference only, that in good Ground the Stalks will be much larger than in poor Land.

The Varieties of the third Sort are,

1. *Brassica Italica purpurea. Juss.* Purple Broccoli.
2. *Brassica Italica alba. Juss.* White Broccoli.

The 2d Sort, I believe, never varies, for I have cultivated it many Years, without altering. This grows naturally on the Sea Shore, near Dover. It hath a perennial branching Stalk, in which it differs from all the other Species. I have continued these three or four Years, and have eaten the young Shoots after they had been much frozen, when they were very sweet and good; but at other Times they are very strong and stringy. In very severe Winters, when the other Sorts are destroyed, this is a necessary Plant, for the most severe Frosts do not injure it. The Leaves are inclining to a purple Colour, and placed alternately on the Branches. The Flower Stalks grow from the End of the Branches, and spread out horizontally; but those which arise from the Center of the Plants, grow erect, and seldom put out Branches.

The 3d Sort, which is the Cauliflower, has been supposed a Variety of the common Cabbage; but from more than forty Years Experience in cultivating these Plants, I could never find the least Appearance of either Species approaching each other; and they are so different in their Leaves, as to be easily distinguished by Persons of Skill, when the Plants are young. But there is one essential Difference between them in their Flower Stems; for the common Cabbage puts out one upright Stem from the Center of the Cabbage, which afterward divides into several Branches, whereas the Cauliflower sends out many Flower Stems from the Part eaten; which is only a compact Collection of the Heads of these Stalks, which afterward divides into so many Stems, which also branch out into many spreading Shoots, these form a large spreading Head when in flower, but never rises pyramidically like the Cabbage.

The two Sorts of Broccoli I take to be only Varieties of the Cauliflower, for although these may with Care be kept distinct, yet I doubt, if they were to stand near each other for Seeds, if they would not intermix; and I am the rather inclined to believe this, from the various Changes which I have observed in all these Sorts, for I have frequently had Cauliflowers of a green Colour, with Flower Buds regularly formed at the Ends of the Shoots, as those of Broccoli, though the Colour was different, and the white Broccoli approaches so near to the Cauliflower, as to be with Difficulty distinguished from it; yet when these are cultivated with Care, and never suffered to stand near each other when left to produce Seeds, they may be kept very distinct, in the same Garden; for the Variations of these Plants is not occasioned from the Soil, but the mixing of the Farina of the Flowers with each other, where they are planted near together: therefore those Persons who are curious to preserve the several Varieties distinct, should never suffer the different Kinds to stand near each other for Seed.

The Cauliflower was first brought to England from the Island of Cyprus, where I have been informed they are in very great Perfection at present: but it is supposed

fed they were originally brought thither from some other Country: Most of the old Writers mention it to have been brought from that Island, to the different Parts of *Europe*, so that from thence all the Gardens in *Europe* have been supplied; and altho' this Plant was cultivated in a few *English* Gardens long since; yet it was not brought to any Degree of Perfection, till about 1680, at least not to be sold in the Markets; and since the Year 1700, they have been so much improved in *England*, that such of them as before were greatly admired, would at present be little regarded.

This Plant has been much more improved in *England*, than in any other Part of *Europe*. In *France* they rarely have Cauliflowers till *Michaelmas*; and *Holland* is generally supplied with them from *England*. In many Parts of *Germany* none of them were cultivated till within a few Years past; and most Parts of *Europe* are supplied with Seeds from hence.

The eighth Sort, which is generally known by the Title of Rape or Cole Seed, is much cultivated in the Isle of *Ely*, and some other Parts of *England* for its Seed, from which the Rape Oil is drawn; and it hath also been cultivated of late Years, in other Places to great Advantage for feeding Cattle. This hath been lately joined to the *Napus Sativa*, or Garden Navew, supposing them to be the same Species; but I have cultivated both Sorts more than twenty Years, and could never observe either of them to vary; indeed the whole Appearance of the Plants, is sufficient to determine them as distinct Species; but as the Garden Navew approaches nearer the Turnep than the Cabbage, so I shall treat of that under the Title of *Rapa*.

The Cole Seed, when cultivated for feeding of Cattle, should be sown about the Middle of *June*. The Ground for this should be prepared for it in the same Manner as for Turneps. The Quantity of Seeds for an Acre of Land, is from six to eight Pounds, and as the Price of the Seeds is not great, so it is better to allow eight Pounds; for if the Plants are too close in any Part, they may be easily thined, when the Ground is hoed. When the Plants have put out six Leaves, they will be fit to hoe, which must be performed in the same Manner as is practised for Turneps, with this Difference only, of leaving these much nearer together; for as they have fibrous Roots, and slender Stalks, they do not require near so much room. These Plants should have a second Hoeing, about five or six Weeks after the first, which, if well performed in dry Weather, will entirely destroy the Weeds, so they will require no farther Culture. By the Middle of *November* these will be grown large enough for Feeding, when, if there is a Scarcity of Fodder, this may be either cut, or fed down; but where there is not an immediate Want of Food, it had better be kept as a Reserve for hard Weather, or Spring Feed, when there may be a Scarcity of other green Food. If the Heads are cut off, and the Stalks left in the Ground, they will shoot again early in the Spring, and produce a good second Crop in *April*, which may be either fed off, or permitted to run to Seeds, as is the Practice, where this is cultivated for the Seeds: But if the first is fed down, there should be Care taken that the Cattle do not destroy their Stems, or pull them out of the Ground. As this Plant is so hardy, as not to be

destroyed by Frost, it is of great Service in hard Winters for feeding Ewes; for when the Ground is so hard frozen that Turneps cannot be taken up, these Plants may be cut off, for a constant Supply. In several Places where I have sown this Seed, I have found that one Acre of Land will produce as much Food, as almost two Acres of Turneps; and this will afford late Food after the Turneps are run to Seed. If it is afterward permitted to stand for Seed, one Acre will produce as much as, at a moderate Computation, will sell for five Pounds, clear of Charges.

Partridges, Pheasants, Turkeys, and most other Fowl, are very fond of this Plant; so that wherever it is cultivated, if there are any Birds in the Neighbourhood, they will constantly lie among these Plants.

The Seeds are sown in Gardens, for Winter and Spring Sallets, this being one of the small Sallet Herbs.

The common white, red, flat, and long-sided Cabbages are chiefly cultivated for Winter Use: The Seeds of these Sorts must be sown the End of *March*, or Beginning of *April*, in Beds of good fresh Earth; and in *May*, when the young Plants have about eight Leaves, they should be pricked out into shady Borders, about three Inches square; that they may acquire Strength, and to prevent their growing long shanked.

About the Beginning of *June*, you must transplant them out, where they are to remain for good (which in the Kitchen Gardens near *London*, is commonly between Cauliflowers, Artichokes, &c. at about two Feet and a Half Distance in the Rows); but if they are planted for a full Crop in a clear Spot of Ground, the Distance from Row to Row should be three Feet and a Half, and in the Rows two Feet and a Half asunder: If the Season should prove dry when they are transplanted out, you must water them every other Evening, until they have taken fresh Root; and afterwards, as the Plants advance in Height, you should draw the Earth about their Stems with a Hoe, which will keep the Earth moist about their Roots, and greatly strengthen the Plants: You must also observe to keep them clear from Weeds, which are apt to draw the Plants up tall (if suffered to grow amongst them), and often spoil them. Some of these Cabbages will be fit for Use soon after *Michaelmas*, and will continue until the End of *February*, if not destroyed by bad Weather; to prevent which, the Gardeners near *London* pull up their Cabbages in *November*, and trench their Ground up in Ridges, laying their Cabbages against their Ridges as close as possible on one Side, burying their Stems in the Ground: In this Manner they let them remain till after *Christmas*, when they cut them for the Market; and altho' the outer Part of the Cabbage be decayed (as is often the Case in very wet or hard Winters), yet, if the Cabbages were large and hard when laid, the Inside will remain sound.

The *Russian* Cabbage was formerly in much greater Esteem than at present, it being now only to be found in particular Gentlemen's Gardens, who cultivate it for their own Use, and is rarely ever brought to the Market. This must be sown late in the Spring of the Year, and managed as those before directed, with this Difference only, that these must be sooner planted out for good, and must have an open clear Spot of Ground, and require much less Distance every Way; for it is but a

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very small hard Cabbage. These will be fit for use in *July* or *August*; but will not continue long before they will break, and run up to Seed. The best Method to have these Cabbages good, is to procure fresh Seeds from abroad every Year; for it is apt to degenerate in *England* in a few Years.

The early and Sugar Loaf Cabbages are commonly sown for Summer Use, and are what the Gardeners about *London* commonly call *Michaelmas* Cabbages. The Season for sowing them is about the End of *July*, or Beginning of *August*, in an open Spot of Ground; and when the Plants have got eight Leaves, you must prick them into Beds at about three Inches Distance every Way, that the Plants may grow strong and short shanked; and in the Middle of *October* you should plant them out for good: The Distance that these require is, three Feet Row from Row, and two Feet and a Half asunder in the Rows. The Gardeners near *London* commonly plant these Cabbages upon the same Spot of Ground, where their Winter Spinach is sown; so that when the Spinach is cleared off in the Spring, the Ground will have a Crop of Cabbages upon it; you must therefore clear off the Spinach just round each Plant early in the Spring, that with a Hoe you may draw the Earth up to the Stem; and when all your Spinach is cleared off, which is commonly in the Beginning of *April*, you must hoe down all the Weeds, and draw up the Earth again about your Cabbage Plants.

In *May*, if your Plants were of the early Kind, they will turn in their Leaves for Cabbaging; at which time, the Gardeners near *London*, in order to obtain them a little sooner, tie in their Leaves close with a slender Osier-twig to blanch their Middle; by which means they have them at least a Fortnight sooner than they could have if they were left untied.

The early Cabbage being the first, we should choose (if for a Gentleman's Use) to plant the fewer of them, and a greater Quantity of the Sugar-loaf Kind, which comes after them; for the early Kind will not supply the Kitchen long, generally cabbaging apace when they begin, and as soon grow hard, and burst open; but the Sugar-loaf Kind is longer before it comes, and is slow in cabbaging; and, being of an hollow Kind, will continue good for a long time. I have known a large Quarter of Ground, planted with this Sort of Cabbage for the Market, which afforded a Supply for near three Months together. This, though of singular Service to a Gentleman's Garden, is not so much for the Advantage of the Market Gardener, who loves to have his Ground cleared sooner, that he may have another Crop upon it, of Celery, Endive, &c. which is more to his Purpose; for they, paying large Rents for their Land, are obliged to have as many Crops in a Year as possible.

Although I before have advised the planting out Cabbages for good in *October*, yet the Sugar-loaf Kind may be planted out in *February*, and will succeed as well as if planted earlier, with this Difference only, that they will be later before they cabbage. You should also reserve some Plants of the early Kind in some well-sheltered Spot of Ground, to supply your Plantation, in case of a Defect; for in mild Winters many of the Plants are apt to run to Seed, especially when their Seeds are sown too early, and in severe Winters they are often destroyed.

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The *Savoy* Cabbages are propagated for Winter Use, being generally esteemed the better when pinched by Frost: These must be sown about the Middle of *April*, and treated after the Manner directed for the common white Cabbage; with this Difference, that the *Savoy* Cabbage may be planted closer; two Feet and a Half square will be sufficient. These are always much better when planted in an open Situation, clear from Trees and Hedges; for in close Places they are very subject to be eaten up by Caterpillars, and other Vermin, especially if the Autumn proves dry.

The Borecole may be also treated in the same Manner, but need not be planted above one Foot asunder in the Rows, and the Rows two Feet distance: These are never eaten till the Frost hath rendered them tender; for otherwise they are tough and bitter.

The Seeds of the Broccoli, (of which there are several Kinds; viz. the *Roman*, or purple, and the *Neapolitan*, or white, and the black Broccoli, with some others; but the *Roman* is chiefly preferred to them all) should be sown about the latter End of *May*, or Beginning of *June*, in a moist Soil; and when the Plants have eight Leaves, transplant them into Beds (as was directed for the common Cabbage); and toward the latter End of *July* they will be fit to plant out for good, which should be in some well-sheltered Spot of Ground, but not under the Drip of Trees: The Distance these require is about a Foot and a Half in the Rows, and two Feet Row from Row. The Soil, in which they should be planted, ought to be rather light than heavy, such as are the Kitchen Gardens near *London*: If your Plants succeed well (as there will be little Reason to doubt, unless the Winter proves extreme hard), they will begin to shew their small Heads, which are somewhat like a Cauliflower, but of a purple Colour, about the End of *December*, and will continue eatable till the Middle of *April*.

The brown or black Broccoli is by many Persons greatly esteemed, though it doth not deserve a Place in the Kitchen-Garden, where the *Roman* Broccoli can be obtained, which is much sweeter, and will continue longer in Season: Indeed, the brown Sort is much hardier, so that it will thrive in the coldest Situations, where the *Roman* Broccoli is sometimes destroyed in very hard Winters. The brown Sort should be sown the Middle of *May*, and managed as hath been directed for the common Cabbage, and should be planted about two Feet and a Half asunder. This grows very tall, so should have the Earth drawn up to the Stems as they advance in Height. This doth not form Heads so perfect as the *Roman* Broccoli; the Stems and Hearts of the Plants are the Parts which are eaten.

The *Roman* Broccoli (if well managed) will have large Heads, which appear in the Center of the Plants, like Clusters of Buds. These Heads should be cut before they run up to Seed, with about four or five Inches of the Stem; the Skin of these Stems should be stripped off, before they are boiled: These will be very tender and little inferior to Asparagus. After the first Heads are cut off, there will be a great Number of Side Shoots produced from the Stems, which will have small Heads to them, but are full as well flavoured as the large. These Shoots will continue good until the Middle of *April*, when the Asparagus will come in Plenty to supply the Table.

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The *Naples* Broccoli hath white Heads, very like the Cauliflower, and eats so like it, as not to be distinguished from it: This is much tenderer than the *Roman* Broccoli; so is not so much cultivated in *England*; for as the Gardens near *London* generally produce great Plenty of late Cauliflowers, which, if the Season proves favourable, will continue till *Christmas*; the *Naples* Broccoli, coming at the same Time, is not so valuable.

Besides this first Crop of Broccoli (which is usually sown in the End of *May*), it will be proper to sow another Crop the Beginning of *July*, which will come in to supply the Table the latter End of *March*, and the Beginning of *April*; and being very young, will be extremely tender and sweet.

In order to save good Seeds of this Kind of Broccoli in *England*, you should reserve a few of the largest Heads of the first Crop, which should be let remain to run up to Seed, and all the under Shoots be constantly stripped off, leaving only the main Stem to flower and seed. If this be duly observed, and no other Sort of Cabbage permitted to seed near them, the Seeds will be as good as those procured from abroad, and the Sort may be preserved in Perfection many Years.

The Manner of preparing the *Naples* Broccoli for the Table is, this: When your Heads are grown to their full Bigness (as may be easily known by their dividing, and beginning to run up), then you should cut them off, with about four Inches of the tender Stem to them; then strip off the outer Skin of the Stem, and after having washed them, boil them in a clean Linen Cloth (as is practised for Cauliflowers), and serve them up with Butter, &c. and, if they are of a right Kind, they will be tenderer than any Cauliflowers, though very like them in Taste.

The Turnep rooted Cabbage was formerly more cultivated in *England*, than at present; for since other Sorts have been introduced which are much better flavoured, this Sort has been neglected. Some esteem this Kind for Soups; but it is generally too strong for most *English* Palates, and is seldom good but in hard Winters, which will render it tender, and less strong.

It may be propagated by sowing the Seeds in *April*, on a Bed of light fresh Earth; and when the Plants are come up about an Inch high, they should be transplanted out in a shady Border, at about two Inches Distance every Way, observing to water them until they have taken Root; after which time they will require no other Culture, but to keep them clear from Weeds, unless the Season should prove extremely dry; in which case it will be proper to water them every four or five Days, to prevent their being stunted by the Mildew, which is subject to seize these Plants in very dry Weather.

In the Beginning of *June*, they should be transplanted out where they are to remain, allowing them two Feet Distance every Way, observing to water them until they have taken Root; and as their Stems advance, the Earth should be drawn up to them with a Hoe, which will preserve a Moisture about their Roots, and prevent their Stems from drying, and growing woody, so that the Plants will grow more freely, but it should not be drawn very high, for as it is the globular Part of the Stalk which is eaten, so that should not be covered. In Winter they will be fit for Use, when they should be cut

off, and the Stalks pulled out of the Ground, and thrown away, as good for nothing after the Stems are cut off.

The curled Colewort or *Siberian* Borecole is now more generally esteemed than the former. It is extreme hardy, never injured by Cold, but always sweeter in severe Winters, than in mild Seasons. This may be propagated by sowing the Seeds the Beginning of *July*; and when the Plants are strong enough for Transplanting, they should be planted in Rows about a Foot and a half asunder, and ten Inches Distance in the Rows; this Work should be performed at a moist time, when the Plants will soon take Root, and require no farther Care. These will be fit for Use after *Christmas*, and continue good until *April*, so are very useful in a Family.

The Musk Cabbage has, thro' Negligence, been almost lost in *England*, tho' it is one of the best Kinds we have; but being tenderer than many other Sorts, is not so profitable for Gardeners who supply the Markets; but those who cultivate them for their own Table, should make Choice of this, rather than any of the common Cabbage; for it is always looser, and the Leaves more crisp and tender, and has a most agreeable musky Scent when cut. This may be propagated in the same manner as the common Cabbage, and should be allowed the same Distance: it will be fit for Use in *October*, *November*, and *December*; but, if the Winter proves hard, these will be destroyed much sooner than the common Sort.

The common Colewort or *Dorsetshire* Kale, is now almost lost near *London*, where the Markets are usually supplied with Cabbage Plants instead of them, which being tenderer, and more delicate, in Winter are much more cultivated than the common Colewort; this last is better able to resist the Cold in severe Winters, but is not near so delicate till pinched by Frost. Where Farmers sow Coleworts to feed their Milch-cattle in the Spring, when there is a Scarcity of Herbage, the common Colewort is to be preferred, being so very hardy, that no Frost will destroy it. The best Method to cultivate this Plant in the Fields is, to sow the Seeds about the Beginning of *July*, choosing a moist Season, which will bring up the Plants in about ten Days or a Fortnight: the Quantity of Seed for an Acre of Land is nine Pounds; when the Plants have got five or six Leaves, they should be hoed, as practised for Turneps, cutting down all the Weeds from among them, and thinning the Plants where they are too thick; they should be left thicker than Turneps, because they are more in Danger of being destroyed by the Fly: this Work should be performed in dry Weather, that the Weeds may be killed; for if it should prove moist soon after, the Weeds will take Root again, and render the Work of little Use. About six Weeks after, the Plants should have a second Hoeing, which, if carefully performed in dry Weather, will entirely destroy the Weeds, and they will require no farther Culture: In Spring they may either be drawn up and carried out to feed the Cattle, or they may be turned in to feed upon them; but the former Method is to be preferred, because there will be little Waste; whereas, when the Cattle are turned in among the Plants, they will tread down and destroy more than they eat, especially if not fenced off by Hurdles.

The perennial Colewort is also little cultivated in the Gardens near *London* at present. This is very hardy,

and may be cultivated as the former Sort. This will continue two Years before it runs up to Seed, and will afterwards produce many Side Shoots; in poor Land it will continue three or four Years; but in rich Soils not so long. This may be used as the former Sort, to feed Cattle; for it is not so good for the Table, as the Plants now cultivated for that Purpose, unless in very severe Frost.

The 5th Sort came from *China*, where it is cultivated as an esculent Plant; of this there are two or three Varieties, which I have cultivated some Years, but I find them as variable as our common Cabbage. These are annual Plants, which, if sown in *April*, will flower in *July*, and perfect their Seeds in *October*. They never close their Leaves to form a Head, like the common Cabbage, but grow open and loose, more like the wild Navew, and are very unfit for the Table. As these are generally in Perfection the Beginning of *July*, I imagined their strong Flavour and Toughness might be occasioned by the Warmth of the Season; therefore sowed some of the Seeds in *July*, to make Trial of them in Winter; but in the midst of Frost, I found them much worse than our common Colewort, so thought them not worth propagating.

The other 2 Sorts of Cabbage are Varieties fit for a Botanick Garden; but are Plants of no Use. These may be propagated by sowing their Seeds on a Bed of light Earth, early in the Spring, in the Place where they are designed to remain, for they do not bear transplanting well: When the Plants are come up pretty strong, they should be thinned, so as to leave them four or five Inches apart; and they must be constantly kept clear from Weeds; they flower in *June*, and their Seeds ripen in *August*, which if permitted to fall, the Plants will come up, and maintain themselves without any Care but to keep them clear from Weeds. They are annual Plants, and perish when they have perfected their Seeds.

The best Method to save the Seeds of all Sorts of Cabbages is, about the End of *November* to pull up some of your best Cabbages, and hang them in a Shed, or other covered Place, for three or four Days by their Stalks, that the Water may drain from between their Leaves; then plant them in a Border, under a Hedge or Pale, quite down to the Middle of the Cabbage, leaving only the upper Part of the Cabbage above Ground, observing to raise the Earth about it, so that it may stand a little above the Level of the Ground; especially if the Ground is wet, they will require to be raised pretty much above the Surface. If the Winter should prove very hard, lay a little Straw or Pease Haulm lightly upon them, to secure them from the Frost; taking it off as often as the Weather proves mild, lest by keeping them too close they should rot. In Spring these Cabbages will shoot out strongly, and divide into a great Number of small Branches: You must therefore support their Stems, to prevent their being broken off by the Wind; and if the Weather should be very hot and dry when they are in Flower, refresh them with Water once a Week all over the Branches, which will greatly promote their Seeding, and preserve them from Mildew.

When the Pods begin to change brown, you will do well to cut off the extreme Part of every Shoot with the Pods, which will strengthen your Seeds; for it is gene-

rally observed, that those Seeds which grow near the Top of the Shoots, are very subject to run to Seed before they cabbage; so that by this there will be no Loss, but a great Advantage; especially if you have more Regard to the Quality than to the Quantity of the Seeds; which indeed is not always the Case, when it is intended for Sale: But those who save it for their own Use, should be very careful to have it good.

When your Seeds begin to ripen, you must be particularly careful, that the Birds do not destroy it; for they are very fond of these Seeds. In order to prevent them, some use old Nets, which they throw over the Seeds, to prevent their getting to it: But this will not always do; for, unless the Nets are very strong, they will force their Way through them, as I have often seen; but the best Method I know, is to get a Quantity of Birdlime, and dawb over a Parcel of slender Twigs, which should be fastened at each End to stronger Sticks, and placed near the upper Part of the Seed, in different Places, so that the Birds may alight upon them, by which Means they will be fastened thereto; where you must let them remain a considerable Time, if they cannot get off themselves: And although there should not above two or three Birds be caught, yet it will sufficiently terrify the rest, that they will not come to that Place again for a considerable Time after, as I have experienced.

When the Seeds are fully ripe, cut off the Stalks, and, after drying, thresh it out, and preserve it in Bags.

But in planting Cabbages for Seed, I would advise never to plant more than one Sort in a Place, or near one another: As for Example, never plant red and white Cabbages near each other, nor Savoy with either white or red Cabbages; for I am very certain they will, by the Commixture of their *Effluvia*, produce a Mixture of Kinds; and it is wholly owing to this Neglect, that the Gardeners rarely save any good red Cabbage Seed in *England*, but are obliged to procure fresh Seeds from Abroad, supposing the Soil or Climate of *England* alters them from red to white, and of a mixed Kind between both; whereas, if they would plant red Cabbages by themselves for Seeds, and not suffer any other to be near them, they might continue the Kind as good in *England*, as in any other Part of the World: For in the *Dutch* Gardens, from whence the best Seeds of red Cabbages are procured, they cultivate no other Sort.

Cauliflowers have of late Years been so far improved in *England*, as to exceed in Goodness and Magnitude what are produced in most Parts of *Europe*, and by the Skill of the Gardener, are continued for several Months together; but the most common Season for the great Crop, is in *May*, *June*, and *July*. I shall therefore begin with Directions for obtaining them in this Season.

Having procured a Parcel of good Seed, of an early Kind, sow it about the twenty-first of *August*, upon an old Cucumber or Melon Bed, sifting a little Earth over the Seeds, about a Quarter of an Inch thick; and if the Weather should prove extreme hot and dry, shade the Bed with Mats, to prevent the Earth from drying too fast, which would endanger the spoiling of your Seed; and give it gentle Waterings, as you may see occasion. In about a Week's Time your Plants will appear above Ground, when you must take off your Coverings by

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Degrees; but do not expose them too much to the open Sun at first: In about a Month's Time after Sowing, your Plants will be fit to prick out; you should therefore put some fresh Earth upon your old Cucumber or Melon Beds; or where these are not to be had, some Beds should be made with a little new Dung, which should be troden down close, to prevent the Worms from getting through it; but it should not be hot Dung, which would be hurtful to the Plants at this Season, especially if it proves hot; into this Bed you should prick your young Plants at about two Inches square, observing to shade and water them at first planting; but do not water them too much after they are growing, nor suffer them to receive too much Rain, if the Season should prove wet, which would be apt to make them black shanked (as the Gardeners term it, which is no less than a Rottenness in their Stems), and is the Destruction of the Plants so affected.

In this Bed they should continue till about the thirtieth of *October*, when they must be removed into the Place where they are to remain during the Winter Season, which, for the first Sowing, is commonly under Bell or Hand Glasses, to have early Cauliflowers; and these should be of an early Kind: But in order to have a Succession during the Season, you should be provided with a later Kind, which should be sown four or five Days after the first, and managed as was directed for them.

In order to have very early Cauliflowers, make choice of a good rich Spot of Ground, well defended from the North, East, and West Winds, with Hedges, Pales, or Walls; but the first is to be preferred, if made with Reeds, because the Winds will fall dead in these, and not reverberate as by Pales, or Walls. This Ground should be well trenched, burying therein a good Quantity of rotten Dung; then level the Ground; and if the Soil be naturally wet, raise it up in Beds about two Feet and a Half, or 3 Feet broad, and 4 Inches above the Level of the Ground: But if the Soil is moderately dry, you need not raise it at all: Then set your Plants, allowing about 2 Feet 6 Inches Distance from Glass to Glass, in the Rows, always putting two good Plants under each Glass, which may be at about 4 Inches from each other; and if you design them for a full Crop, they may be 3 Feet and a Half, Row from Row: But if you intend to make Ridges for Cucumbers or Melons between the Rows of Cauliflower Plants (as is generally practised by the Gardeners near *London*), you must then make your Rows 8 Feet asunder.

When you have planted them, if the Ground is very dry, give them a little Water, and then set the Glasses over them, which may remain close down until they have taken Root, which will be in about a Week or ten Days Time, unless there should be a kindly Shower of Rain; in which case you may set off the Glasses, that the Plants may receive the Benefit of it; and in about ten Days after planting, you should be provided with a Parcel of forked Sticks or Bricks, with which you should raise your Glasses about 3 or 4 Inches on the Side toward the South, that your Plants may have free Air: In this Manner your Glasses should remain over the Plants, Night and Day, unless in frosty Weather, when you should set them down as close as possible: Or if the Weather should prove very warm, which many times

happens in *November*, and sometimes in *December*, in this Case, you should keep your Glasses off in the Day Time, and put them on only in the Night, lest, by keeping the Glasses over them too much, you should draw them into Flower at that Season; which is many times the Case in mild Winters, especially if unskillfully managed.

Toward the latter End of *February*, if the Weather proves mild, prepare another good Spot of Ground, to remove some of the Plants into, from under the Glasses, which should be well dunged and trenched (as before); then set off your Glasses; and, after making choice of one of the most promising Plants under each Glass, which should remain for good, take away the other Plant, by raising it up with a Trowel, &c. so as to preserve as much Earth to the Root as possible; but have a great Regard to the Plant that is to remain, not to disturb or prejudice its Roots: Then plant those you have taken out, at the Distance before directed, *viz.* If for a full Crop, 3 Feet and a Half, Row from Row; but if for Ridges of Cucumbers between them, 8 Feet, and 2 Feet 4 Inches Distance in the Rows: Then, with a small Hoe, draw the Earth up to the Stems of the Plants which were left under the Glasses, taking great Care not to let the Earth fall into their Hearts; and set your Glasses over them again, raising your Props an Inch or two higher than before, to give them more Air, observing to take them off whenever there may be some gentle Showers, which will greatly refresh the Plants.

In a little Time after, if you find your Plants grow so fast as to fill the Glasses with their Leaves, then dig slightly about the Plants, and raise the Ground round them broad enough for the Glasses to stand, about 4 Inches high, which will give your Plants a great deal of Room by raising the Glasses so much higher, when they are set over them; and by this Means they may be kept covered until *April*, which otherwise they could not, without Prejudice to their Leaves: This is a great Advantage to them; for many times we have Returns of severe Frosts at the latter End of *March*, which prove very hurtful to these Plants, if exposed thereto, especially after having been nursed up under Glasses.

After you have finished your Beds, set the Glasses over your Plants again, observing to raise the Props pretty high, especially if the Weather be mild, that they may have free Air to strengthen them; and in mild soft Weather set off your Glasses, as also in gentle Showers of Rain: You must now begin to harden them by Degrees to endure the open Air; however, it is advisable to let the Glasses remain over them as long as possible, if the Nights should be frosty, which will greatly forward your Plants: But be sure do not let the Glasses remain upon them in very hot Sun-shine, especially if their Leaves press against the Sides of the Glasses; for I have often observed, in such Cases, that the Moisture which hath risen from the Ground, together with the Perspiration of the Plants, which, by the Glasses remaining over them, hath been detained upon the Leaves of the Plants, and when the Sun hath shone hot upon the Sides of the Glasses, hath acquired such a powerful Heat, as to scald all their larger Leaves, to the no small Prejudice of the Plants: Nay, sometimes I have seen large Quantities of Plants so affected therewith, as never to be worth any thing after.

If your Plants have succeeded well, toward the End of *April* some of them will begin to Flower: You must therefore look over them carefully every other Day; and when you see the Flower plainly appear, break down some of the inner Leaves over it to guard it from the Sun, which would make the Flower yellow and unsightly, if exposed thereto; and when you find the Flower at its full Bigness (which you may know by its Outside, parting, as if it would run), you must then draw it out of the Ground, and not cut them off, leaving the Stalk in the Ground, as is by some practised; and if they are designed for present Use, you may cut them out of their Leaves; but if designed to keep, you should preserve their Leaves about them, and put them into a cool Place: The best Time for pulling them, is in a Morning, before the Sun hath exhales the Moisture; for Cauliflowers, pulled in the Heat of the Day, lose that Firmness which they have naturally, and become tough.

But to return to our second Crop (the Plants being raised and managed as was directed for the early Crop, until the End of *October*); you must then prepare some Beds, either to be covered with Glass Frames, or arched over with Hoops, to be covered with Mats, &c. These Beds should have some Dung laid at the Bottom, about 6 Inches or a Foot thick, according to the Size of your Plants; for if they are small, the Bed should be thicker of Dung, to bring them forward, and so *vice versa*: This Dung should be beat down close with a Fork, in order to prevent the Worms from finding their Way through it; then lay some good fresh Earth about four or five Inches thick thereon, in which put your Plants about two Inches and a Half square, observing to shade and water them until they have taken fresh Root: But be sure do not keep your Coverings close; for the Warmth of the Dung will occasion a large Damp in the Bed, which, if pent in, will greatly injure the Plants.

When your Plants have taken Root, give them as much free open Air as possible, by keeping the Glasses off in the Day-time, as much as the Weather will permit; and in the Night, or at such times as the Glasses require to be kept on, raise them up with Bricks or other Props to let in fresh Air, unless in frosty Weather; at which Time the Glasses should be covered with Mats, Straw, or Peas Haulm, but this is not to be done but in very hard Frosts: Observe also to guard them against great Rain, which in Winter is very hurtful to them, but in mild Weather, if the Glasses are kept on, they should be propped to admit fresh Air; and if the under Leaves grow yellow, and decay, be sure to pick them off; for if the Weather should prove very bad in Winter, so that you should be obliged to keep them close covered for 2 or 3 Days together, as it sometimes happens, these decayed Leaves will render the inclosed Air very noxious; and the Plants, inspiring pretty much at that Time, are often destroyed in vast Quantities.

In the Beginning of *February*, if the Weather be mild, you must begin to harden your Plants by Degrees, that they may be prepared for Transplantation; and the Ground where you intend to plant your Cauliflowers out for good (which should be quite open from Trees, &c. and rather moist than dry), having been well dunged and dug, should be sown with Radishes a Week or

Fortnight before you intend to plant out your Cauliflowers: The Reason why I mention the sowing of Radishes particularly, is this; *viz.* that if there are not some Radishes amongst them, and the Month of *May* should prove hot and dry, as it sometimes happens, the Fly will seize your Cauliflowers, and eat their Leaves full of Holes, to their Prejudice, and sometimes their Destruction; whereas, if there are Radishes upon the Spot, the Flies will take to them, and never meddle with the Cauliflowers so long as they last: Indeed, the Gardeners near *London* mix Spinach with their Radish Seed, and so have a double Crop; which is an Advantage where Ground is dear, or where Persons are streightened for Room; otherwise it is very well to have only one Crop amongst the Cauliflowers, that the Ground may be cleared in time.

Your Ground being ready, and the Season good, about the Middle of *February*, you may begin to plant out your Cauliflowers: The Distance which is generally allowed by the Gardeners near *London* (who plant other Crops between their Cauliflowers to succeed them, as Cucumbers for Pickling, and Winter Cabbages) is every other Row four Feet and a Half apart, and the intermediate Rows two Feet and a Half, and two Feet two Inches Distance in the Rows; so that in the latter end of *May*, or beginning of *June* (when the Radishes and Spinach are cleared off), they put in Seeds of Cucumbers for Pickling, in the Middle of the wide Rows, at three Feet and a Half apart; and in the narrow Rows, plant Cabbages for Winter Use, at two Feet two Inches Distance, so that these stand each of them exactly in the Middle of the Square between four Cauliflower Plants; and these, after the Cauliflowers are gone off, will have full Room to grow, and the Crop be hereby continued in a Succession through the whole Season.

About three Weeks or a Month after your Cauliflowers are planted out, the Radishes between them will be fit to hoe; at which Time, when you are hoeing out the Radishes, where they are too thick, you should cut off all such as grow immediately about the Cauliflowers, and would prove hurtful to them, by drawing them up tall and weak; and also at that Time draw the Earth up to the Stems of the Plants, being careful not to let any get into their Hearts (as was before directed); and when your Radishes are fit to pull, be sure to clear round the Cauliflowers first, and keep drawing the Earth up to their Stems as they advance in Height, which will keep their Stems from being hardened by the Weather, and be of singular Service to your Plants.

There are many People, who are very fond of watering Cauliflower Plants in Summer; but the Gardeners near *London* have almost wholly laid aside this Practice, as finding a deal of Trouble and Charge to little Purpose; for if the Ground be so very dry as not to produce tolerable good Cauliflowers without Water, it seldom happens, that watering of them renders them much better; and when once they have been watered, if it is not constantly continued, it had been much better for them if they never had any; as also, if it be given them in the Middle of the Day, it rather helps to scald them: So that, upon the Whole, if Care be taken to keep the Earth drawn up to their Stems, and clear them from every thing that grows near them, that

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they may have free open Air, you will find that they will succeed better without than with Water, where any of these Cautions are not strictly observed.

When your Cauliflowers begin to Flower, you must often look over them, to turn down their Leaves, as before directed, to preserve their Whiteness; and when they are full grown, observe the former Directions in pulling them, &c. but wherever you meet with an extraordinary good Cauliflower, whose Curd is hard and white, and perfectly free from any Frothiness about the Edges, you should suffer it to remain for Seed, keeping the Leaves close down upon it until the Flower hath shot out Stems, and then remove the Leaves from them by degrees; but do not expose them too much to the open Air at first. As the Stems advance, take the Leaves quite away; and when they begin to branch out, fix three pretty strong Stakes, at equal Angles, about it, surrounding them with Packthread, &c. to support their Branches, which would be otherwise liable to break with the Wind.

When your Pods begin first to be formed, if the Weather proves dry, give them a little Water all over (with a Watering Pot that hath a Rose to it); which will promote the Progress of the Seeds, and preserve them from the Mildew, which is often hurtful to these Seeds; and, when the Seed is ripe, cut it off and hang it up to dry, and rub it out as was directed for Cabbage Seed: And although your Flowers do not produce so much Seed as those which were of a softer or frothy Nature; yet the Goodness of such Seeds will sufficiently recompense for the Quantity; and any Person who was to purchase his Seeds, had better give ten Shillings an Ounce for such Seed than two for the Seeds commonly saved for Sale, as the Gardeners about London have experienced, who will never buy any Seeds of this Kind, if they do not know how they were saved.

But in order to have a third Crop of Cauliflowers, make a slender hot Bed in February, in which you should sow the Seeds, covering them a Quarter of an Inch thick with light Mould, and covering the Bed with Glass Frames: You should now and then gently refresh the Bed with Water, observing to raise the Glasses with Bricks, or Props in the Day Time, to let in fresh Air; when the Plants are come up, and have gotten four or five Leaves, prepare another hot Bed to prick them into, which may be about two Inches square; and in the Beginning of April harden them by Degrees, to fit them for transplanting, which should be done the Middle of that Month, at the Distance directed for the second Crop, and must be managed accordingly: These (if the Soil is moist where they are planted, or the Season cool and moist) will produce good Cauliflowers about a Month after the second Crop is gone, whereby their Season will be greatly prolonged.

A 4th Crop of Cauliflowers may be had by sowing the Seed about the 23d of May; and being transplanted, as before directed, will produce good Cauliflowers in a kindly Season, and good Soil, after Michaelmas, and continue October and November, and, if the Season permit, often a great Part of December. The Reason why I fix particular Days for Sowing this Seed is because two or three Days often make a great Difference in the Plants; and these are the Days usually fixed by the Gardeners

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near London, who have found their Crops to succeed best when sown at those Times, though one Day, more or less, will make no great Odds. I have also, in this Edition, altered the Days to the New Style.

BREYNIA. Plum. N. Gen. 40. Lin. Gen. 566.

This Plant was so named by Father Plumier, in Honour of Dr. Breynius, a learned Botanist at Dantzick; who published two Prodromuses to his History of Plants, and one Century in Folio; in which the Plants are curiously delineated and engraven.

The Characters are,

It hath a spreading thick Empalement, cut at the Top into four oval Segments. The Flower hath four oval Petals which spread open, and are a little longer than the Empalement. It hath a great Number of slender Stamina, longer than the Petals, supporting long erect Summits. In the Center is situated a slender oblong obtuse Germen, having no Style, but is terminated by a blunt Stigma. The Germen becomes a long soft fleshy Pod opening in two Valves, with one Cell, inclosing a Row of fleshy Kidney-shaped Seeds.

The Species are,

1 BREYNIA foliis oblongo-ovalibus. Prod. Leyd. 476. Breynia with oblong oval Leaves. Breynia Elæagni foliis Plum. Nov. Gen. 40. Breynia with Wild Olive Leaves.

2. BREYNIA foliis lanceolatis serratis, petiolatis. Breynia with sawed Spear-shaped Leaves, having long Foot Stalks. Breynia Amygdali foliis latioribus Plum. Nov. Gen. 40. Breynia with broad Almond Tree Leaves.

The 1st Sort grows naturally in most of the Sugar Islands in America. The Seeds were sent me from Jamaica, in 1730, and I have since received them from Antigua, by the Title of Ratsbean, the Rats being very fond of it, so as to eat them upon the Trees while growing.

This, in the Countries where it naturally grows, rises with an upright Stem, to the Height of twenty five, or thirty Feet, dividing into many Branches at the Top, covered with an Ash coloured Bark, and closely garnished with oblong Leaves, ending in a Point; these are placed on every Side the Branches without Order, and are of the Consistence of those of the Bay Tree, white on their under Side, but of an Olive Colour on their upper Side, and are very smooth and shining.

The Flowers are produced in loose Panicles at the Extremity of the Branches, each standing on a separate Foot Stalk, having an Empalement, composed of four oval stiff Leaves, which spread open in Form of a Cross, and four purple Petals of the same Shape, but longer, which spread open alternately between the Leaves of the Empalement. In the Center arises the long Germen, attended by a great Number of slender purple Stamina, which are stretched out a great Length beyond the Petals. After the Flowers decay, the Germen becomes a long, cylindrical, fleshy Pod, containing three or four Seeds, situated at a Distance; where each Seed is lodged, the Pod has a large Swelling, but is contracted between them.

The 2d Sort was found at Campeachy. This grows to a larger Size than the former, and sends out many lateral Branches at the Top, which are garnished with oblong serrated Leaves, standing on pretty long Foot Stalks; these are of a much thinner Consistence than those

those of the other Sort, and are green on both Sides. As this Sort hath not yet flowered in England, I can give no Account of their Shape or Colour.

These Plants are both very impatient of Cold; therefore must be preserved in Stoves, otherwise they will not live through the Winter in this Climate. They may be propagated by Seeds, which may be obtained from America. These Seeds should be sown on a hot Bed early in Spring, and when the Plants are two Inches high, they should be carefully transplanted, each into a small Pot, filled with light rich Earth, and then plunged into a moderate hot bed of Tanners Bark; observing to water and shade them until they have taken new Root; they should have a moderate Share of Air admitted to them, and they will require to be frequently refreshed with Water during the Summer Season. If the Plants have thrived so well as to fill the Pots with their Roots by the Middle of August, they may be then shaken out carefully, so as to preserve the Earth to their Roots; and after trimming the Fibres on the Outside of the Ball of Earth, they should be put into Pots a Size larger, filling them up with light rich Mould, then plunge them again into the hot Bed, to promote their taking good Root before the Autumn is cold. In this Bed they may remain until the End of September, when they must be placed in the Bark Stove, where, during the Winter Season, they should be kept in a temperate Heat, and often refreshed with Water, but not in large Quantities at this Season.

As these Plants increase in Bulk, put them in larger Pots; but be very careful not to over-pot them, which will cause the Plants to decline, and, if not timely remedied, will destroy them. In Summer these Plants should have a large Share of fresh Air, in warm Weather, but they must not be placed in the open Air; for if they are not constantly preserved from cold, it will destroy them in a short Time. If these Directions are duly observed, the Plants will make great Progress, and, in a few Years, will produce Flowers.

BROMELIA. Plum. 46. Lin. 356.

The Characters are,

It hath a three cornered permanent Empalement, cut into three Parts, upon which the Germen is situated. The Flower hath three long narrow Petals, which are erect, each having a Nectarium joined to it above the Base. It hath six Stamina the Length of the Petals, which are terminated by oblong Summits. The Germen is situated below the Receptacle, supporting a slender Style, crowned by a trifid obtuse Stigma. The Empalement becomes an oblong Capsule, divided by a Partition in the Middle, to which the Seeds are fixed quite round, these are smooth and almost cylindrical.

The Species are,

1. *BROMELIA foliis radicalibus dentato-spinosis caulibus integerrimis.* Lin. Sp. Plant. 286. Bromelia with lower Leaves indented, and prickly, and those of the Stalks entire. *Bromelia pyramidata, aculeis nigris.* Plum. Nov. Gen. 46. Pyramidal Bromelia with black Spines.

2. *BROMELIA foliis serrato-spinosis obtusis, spicis alternis.* Lin. Sp. 285. Bromelia with sawed prickly Leaves, which are obtuse, and Spikes of Flowers growing alternate. *Bromelia ramosa & racemosa foliis Arundinaceis serratis.* Plum. Nov. Gen. 46. Branching and shrubby Bromelia with Reed-like Leaves, which are sawed.

The 1st Sort hath Leaves very like some of the Sorts of Aloes, but not so thick and succulent, which are sharply indented on their Edges, where they are armed with strong black Spines; from the Center of the Plant arises the Flower Stalk, which is near three Feet high, the lower Part of which is garnished with entire Leaves, placed alternately at every Joint. The upper Part of the Stalk is garnished with Flowers, set in a loose Spike, or Thyrs, quite round; these have three narrow herbaceous Petals, sitting upon the Germen, and within are six slender Stamina, with the Style, which are shorter than the Petals. These Flowers in the Country where they grow naturally, are succeeded by oval Seed Vessels, having a longitudinal Partition, in the Center of which are fastened cylindrical Seeds on every Side, which are smooth.

The 2d Sort hath shorter Leaves than the first, which stand erect, and are narrow at the Base, increasing in Width gradually to the Top, where they are broadest; these are sharply sawed on their Edges, and are of a deep green Colour. The Flower Stem arises from the Center of the Plant, which divides upward into several Branches, the upper Part of these are garnished with Spikes of Flowers, which come out alternately from the Side of the Branches, each having a narrow entire Leaf just below it, which is longer than the Spike. The Flowers are placed very close on the Spikes, each having three short Petals, situated upon the globular Empalement; when these decay, the Empalement turns to an oval pointed Seed Vessel, inclosing Seeds of the same Shape with the former.

Both these Plants grow naturally in very warm Countries. Father Plumier, who gave this Title to the Genus, found them growing in the French Islands in America; and the late Dr. Houstoun observed them growing in Jamaica, and in several Parts of the Spanish West-Indies. The first Sort also grows on the Coast of Guinea, from whence I received the Seeds; and the second Sort was sent me from St. Christopher's.

These Plants are propagated by Seeds, which must be procured from the Country where they grow naturally, for they do not produce any in England. These must be sown in small Pots, filled with light Kitchen Garden Earth, and plunged into a moderate hot Bed of Tanners Bark; the Earth in these Pots should be sprinkled over with Water two or three Times a Week, according to the Heat of the Weather, but must not have too much Moisture. If the Seeds are good, the Plants will appear in about five or six Weeks, and in a Month after will be fit to transplant, when they should be carefully shaken out of the Pots, and each planted in a separate small Pot filled with the same Earth as before; then they must be plunged again into a moderate hot Bed, observing frequently to sprinkle them over with Water, but be cautious of giving them too much, lest the Roots should be thereby rotted. During the Summer Season the Plants should have a moderate Share of Air, in Proportion to the Heat of the Weather; and, in Autumn, they must be removed into the Bark Stove, and treated in the same Manner as the Ananas, or Pine Apple, with which Management they will make good Progress; but after the first Winter, they may be placed upon Stands in the dry Stove, though they will thrive much better if

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if they are constantly kept in the Tan Bed, and treated like the Ananas, and will flower in 3 or 4 Years, whereas those in the dry Stove will not flower in twice that Time.

The other Parts of their Culture is only to shift them into fresh Earth when they require it, but they should by no Means be put into large Pots, for they will not thrive if they are over potted, nor must they have much Wet, especially in Winter.

These Plants make a pretty Variety in the hot House, so those who have Room, may allow a Plant or two of each Sort to have a Place in their Collection of exotics.

BROOM, the common. See Spartium.

BROOM, the Spanish. See Spartium and Genista.

BROWALLIA. Lin. Gen. Plant. 691. Hort. Cliff.

The Characters are,

The Empalement is tubulous, and of one Leaf, indented at the Top in five unequal Parts. The Flower is Funnel-shaped, of one Leaf, having a cylindrical Tube, twice the Length of the Empalement; the upper Part is spread open, and divided into five Parts, the upper Segment, or Lip, being a little larger than the others, which are equal; it hath four Stamina included in the Chaps of the Petal, the two upper being very short, and the two under broad, longer, and reflexed to the Mouth of the Tube, which incloses them; these are terminated by single incurved Summits. In the Center is situated an oval Germen, supporting a slender Style the Length of the Tube, crowned by a thick, compressed, indented Stigma. The Empalement becomes an oval obtuse Vessel with one Cell, opening at the Top in four Parts, and filled with small compressed Seeds.

We have but one Species of this Genus, viz.

BROWALLIA. Hort. Cliff. 138. This is the Dalea. Hort. Chelf. Ind. 67. We have no English Name for it. The Title of Browallia was given to it by Dr. Linnaeus, in Honour of Professor Browall, of Amsterdam.

The Seeds of this Plant, were sent me from Panama, in the Year 1735; which succeeded in the Chelsea Garden, where it has continued to flower, and produce Seeds every Year; but the Plants are annual, so perish in Autumn; the Seeds must be sown upon a hot Bed in Spring, and the Plants brought forward on another; otherwise they will not perfect their Seeds in England. Some of these Plants may be transplanted in June, into the Borders of the Flower Garden, where if the Season proves warm, they will flower and perfect Seeds, but lest these should fail, there should be a Plant kept in the Stove. The Plants usually grow about two Feet high, and spread out into lateral Branches on every Side the Stalk; these are garnished with oval Leaves which are entire, ending in a Point, and have short Foot Stalks. Toward the End of the Branches the Flowers are produced singly, upon pretty long Foot Stalks, arising from the Wing of the Leaf. These have a short Empalement of one Leaf, which is cut into 5 Parts; out of the Center of the Empalement the Flower arises, which is crooked and bent downward; the Top of the Tube is spread open, and the Brim, or open Part of the Flower, has some Resemblance to a lipped Flower, being irregular; it is of a bright blue Colour, sometimes inclining to a purple or red, and often there are Flowers of three Colours on the same Plant. When these fall away, the Germen in the Center becomes an oval Capsule of

one Cell, filled with small brown angular Seeds. It flowers in July, August, and September, and the Seeds are ripe in 5 or 6 Weeks after.

When this Plant was first raised in the Chelsea Garden, I gave it the Title of Dalea, in Honour to Mr. Dale, an eminent Botanist, and a great Friend of Mr. Ray's. By this Title it was delivered to the Royal Society, and printed in the Philosophical Transactions, and also in the Catalogue of the Chelsea Garden: And by the same I communicated the Seeds to Doctor Linnaeus, who afterward changed the Name to Browallia, and printed it in the Catalogue of Mr. Clifford's Garden; where there is a Figure of it exhibited.

BRUNELLA, Self-heal. See Prunella.

BRUNSFELSIA. Plum. 12. This Plant takes its Name from Dr. Brunfelsius, a famous Physician.

The Characters are,

The Empalement of the Flower is permanent, Bell-shaped, and of one Leaf, cut into five blunt Segments at the Top. The Flower is of one Leaf, and Funnel-shaped, having a long Tube, but spreads open at the Top, where it is divided into five obtuse Segments; it hath five Stamina the Length of the Tube, which are inserted in the Petal, and terminated by oblong Summits. In the Center is placed a small round Germen, supporting a slender Style the Length of the Tube, which is crowned by a thick Stigma. The Empalement becomes a globular Berry with one Cell, inclosing a great Number of small Seeds, which adhere to the Skin of the Fruit.

We know but one Species of this Genus, viz.

BRUNSFELSIA flore albo, fructu croceo molli. Plum. Nov. Gen. 12. Brunfelsia with a white Flower, and a soft Saffron coloured Fruit.

This Plant rises with a woody Stem, to the Height of eight or ten Feet, sending out many Side Branches, covered with a rough Bark; these are garnished with oblong oval Leaves which are entire, and on the lower Part of the Branches come out single, but toward their Extremity, they are placed on every Side, and are unequal in Size. At the Extremity of the Branches, the Flowers are produced, generally three or four together. These are almost as large as those of the greater Bindweed; but have very long narrow Tubes, which are hairy; the Brim is expanded in the Form of the Convulvulus, but is deeply divided into five obtuse Segments, which are indented on their Border. After the Flower is past, the Empalement turns to a round soft Fruit, inclosing many oval Seeds, which are situated close to the Cover or Skin, to which they adhere.

This Plant grows naturally in most of the Sugar Islands in America, in which Places they call it Trumpet Flower; in the English Gardens, it is very rare; it may be propagated from Seeds, which should be sown early in the Spring in Pots filled with light Earth, and plunged into a hot Bed of Tanners Bark, observing to water the Earth as often as you find it necessary. When the Plants are come up, they should be transplanted each into a small Pot filled with fresh light Earth, and plunged into the hot Bed again, observing to water and shade the Plants until they have taken Root; after which they must have Air admitted to them every Day in Proportion to the Warmth of the Season. When the Plants have advanced so high as not to be contained

in the Frames, they should be removed into the Bark Stove, where, during the Summer Months, they should have a large Share of free Air; but in Winter they must be kept very close. With this Management the Plants will be very strong, and produce their Flowers every Season. These Plants may also be increased by planting their Cuttings in the Spring, before they put out, in Pots filled with fresh light Earth, and plunged into a hot Bed of Tanners Bark; observing to Water and shade them until they have taken Root; after which they must be managed as hath been directed for other tender Exotick Plants from the same Countries.

BRUSCUS. See Ruscus.

BRYONIA, Bryony.

The Characters are,

It both male and female Flowers on the same Plant. The male Flowers have an Empalement of one Leaf, which is Bell-shaped, and indented in five Parts at the Top. The Flower is Bell-shaped, adbering to the Empalement, and cut into five Segments. It hath three short Stamina and five Summits, two of the Stamina having double Summits, and the other one. The female Flowers sit upon the Germen, and have a deciduous Empalement, but the Petal is the same with those of the male. The Germen which is under the Flower, supports a trifid spreading Style, crowned by a spreading indented Stigma. The Germen becomes a smooth globular Berry, containing oval Seeds adbering to the Skin.

The Species are,

1. BRYONIA foliis palmatis utrinque calloso-scabris. Hort. Cliff. 453. Bryony with palmated Leaves, which are rough and callous on both Sides. This is the Bryonia aspera, five alba baccis rubris. C. B. P. 297. Rough or white Bryony with red Berries.

2. BRYONIA Africana laciniata, tuberosa radice, floribus herbaceis. Par. Bat. 107. African tuberous root-ed Bryony, with indented Leaves and an herbaceous Flower.

3. BRYONIA foliis palmatis supra calloso-punctatis. Hort. Cliff. 453. Bryony with palmated Leaves, whose upper Sides are callous and spotted. This is the Bryonia Cretica maculata. C. B. P. 297. Spotted Bryony of Crete.

4. BRYONIA olivæ fructu rubra. Plum. Cat. Bryony with a red Olive-shaped Fruit.

5. BRYONIA Americana fructu variegato. Dillen. American Bryony with a variegated Fruit.

6. BRYONIA foliis palmatis quinquepartitis hirsutis, laciniis obtusis. Bryony with hairy palmated Leaves divided into five Parts, and obtuse Segments. This is the Bryonia Bonariensis fici folio. Hort. Eltb. 58. Bryony of Buenos Ayres, with a Fig Tree Leaf.

The 1st Sort grows upon dry Banks, under Hedges, in many Parts of England; but may be cultivated in a Garden for Use, by sowing the Berries in Spring, in a dry poor Soil; where they will in two Years, grow to be large Roots, provided they are not too close. The Roots of this Plant have been formerly, by Impostors, brought into a human Shape, and carried about the Country, and shewn for Mandrakes to the common People, who were easily imposed on by their Credulity. The Method which these People practised, was to find a young thriving Bryony Plant, then they opened the Earth all round the Plant, being careful not to disturb the lower Fibres; and (being prepared with such a

Mould, as is used by the People who make Plaster Figures) they fixed the Mould close to the Root, fastening it with Wire, to keep it in its proper Situation; then they filled the Earth about the Root, leaving it to grow to the Shape of the Mould, which in one Summer it will do; so that if this be done in March, by September it will have the Shape. The Leaves of this Plant are also often imposed on the People in the Market for Mandrake Leaves, although there is no Resemblance between them, nor any Agreement in Quality.

The 2d and 4th Sorts are perennial Plants, their Roots remaining several Years, but their Branches decay every Winter. These Roots must be planted in Pots filled with fresh light Earth, and in Winter must be placed in the Green-house, to protect them from Frost, and great Rains; which would destroy them, if exposed thereto. During the Winter they should have very little Water, but in Summer, when they are exposed to the open Air, they must be frequently refreshed with Water in dry Weather. These Plants will flower in July, and in warm Summers will perfect their Seeds.

The 3d, 5th, and 6th Sorts, are annual Plants; these must be raised on a hot Bed early in Spring, and when the Plants are about three Inches high, they should be each transplanted into a small Pot filled with fresh light Earth, and plunged into a hot Bed of Tanners Bark, observing to water and shade them until they have taken Root. When the Plants are grown so large, as to ramble about on the Surface of the Bed, and begin to entangle with other Plants, they should be shifted into larger Pots, and placed in the Bark Stove, where their Branches may be trained to the Wall, or against an Espalier, that they may have Sun and Air, which is absolutely necessary for their producing Fruit. When these Plants are full of fruit, they make a pretty Variety in the Stove.

The 2d and 4th Sorts are also propagated from Seeds, which should be sown on a hot Bed; when the Plants are fit to transplant, they should be put into Pots; and after they have taken Root, should be inured to bear the open Air by Degrees; where they may remain during the Summer Season, but in Winter they must be sheltered: The 4th Sort should have a moderate Warmth in Winter, being much tenderer than the former.

The common Bryony when the Plants are young, are many of them entirely male, having no female Flowers upon them; but after two or three Years, they will produce Flowers of both Sexes. I have transplanted some of the young Plants singly, at a Distance, in order to try if the female Flowers would produce Fruit without the Assistance of the male; but one of these Plants produced only male Flowers for two Years, after which I observed many female Flowers upon it, which produced good Seeds, and have continued so to do annually. I have observed the same in Mulberry Trees, which, when young, have for several Years produced only male Flowers or Katkins, but have afterward produced both Sexes, and borne good Fruit.

BRYONIA NIGRA. See Tamnus.

BUBON. Lin. Gen. Plant. 312. Apium. C. B. 154. Ferula. Herm. Par. 163. Macedonian Parsley.

The

The Characters are,

It hath an umbelliferous Flower; the greater, or general Umbel, is composed of about ten smaller, those which are situated in the Middle being the shortest; the small Umbels have near twenty Rays. The general Involucrum hath five pointed Spear-shaped Leaves, which spread open and are permanent; those of the smaller Umbels, consist of many little Leaves of the same Length with the Umbel: The Emplacement of the Flower is permanent, small, and indented in five Parts; the Flower is composed of five Spear-shaped Petals, which turn inward; it hath five Stamina the Length of the Petals, terminated by single Summits. The oval Germen is situated below the Flower, supporting two bristly Styles which are permanent, and the Length of the Stamina crowned by obtuse Stigma. The Germen becomes an oval channeled hairy Fruit, dividing in two Parts, each having an oval Seed, plain on one Side, but convex on the other.

The Species are,

1. *BUBON foliolis rhombeo-ovatis crenatis, umbellis numerosissimis.* Hort. Cliff. 95. Bubon with oval rhomboid crenated Leaves, and many Umbels. This is the *Apium Macedonicum*. C. B. p. 154. And *Petroselinum Macedonicum*. Lob. Icon. 708. Macedonian Parsley.

2. *BUBON foliolis linearibus.* Bubon with very narrow Leaves. This is the *Ferula durior five rigidis & brevissimis foliis.* Boccon. Mus. 2. 84. Hard or rigid Ferula, with very short Leaves.

3. *BUBON foliolis rhombeis serratis glabris, umbellis paucis.* H.C. 96. Bubon with rhomboid Leaves smooth, sawed, and few Umbels. This is the *Ferula Africana galbanifera folio & facie ligustici.* Par. Bat. African Ferula bearing Galbanum, with a Lovage Leaf.

4. *BUBON foliolis glabris inferioribus rhombeis serratis, superioribus pinnatifidis tridentatis.* Prod. Leyd. 100. This is the *Ferula Africana galbanifera folio myrridis.* Hort. Amst. p. 115. Galbanum-bearing African Ferula, with the Mock Chervil Leaf.

The 1st sends out many Leaves from the Root, the lower growing almost horizontally, spreading near the Surface of the Ground: The Foot Stalk of each Leaf divides into several other smaller, which are garnished with smooth Rhomb-shaped Leaves, which are of a bright pale green Colour, and sawed on their Edges. In the Center of the Plant arises the Flower Stem, which is little more than a Foot high, dividing into many Branches, each being terminated by an Umbel of white Flowers, which are succeeded by oblong hairy Seeds. It flowers in July, and the Seeds ripen in Autumn, soon after which the Plant decays.

This Plant in warm Countries is biennial, the Plants which rise from Seeds one Year, produce Flowers and Seeds the next, and then perish: But in England, they seldom flower till the third or fourth Year from Seed; but whenever the Plant flowers, it always dies.

It is propagated by Seeds, which should be sown on a Bed of light sandy Earth in April; and if the Season prove warm and dry, the Ground should be shaded in the Heat of the Day, and frequently refreshed with Water, which is a sure Method to bring up the Plants; where this is not practised, the Seeds often fail, or remain long in the Ground. When the Plants come up,

they require no other Care but to be kept clean from Weeds, till the Beginning of October, when they should be carefully taken up, and planted in a warm Border of dry Ground; and a few of them should be put into Pots, that they may be sheltered under a Frame in Winter; for in severe Frost, those which are exposed to the open Air, are frequently killed; though, in moderate Winters, they will live abroad without covering; but it is a secure Way to preserve the Species, to keep 2 or 3 Plants in Pots, in Shelter, during the Winter. The Seed of this Plant is one of the Ingredients in Venice Treacle.

The 2d Sort grows naturally in Sicily, from whence I received the Seeds. This is a low perennial Plant, having short stiff Leaves, which are very narrow: The Flower Stalk rises near a Foot high, which is terminated by an Umbel of small white Flowers which are succeeded by small oblong channeled Seeds. It flowers in June, and the Seeds ripen in September. It is propagated by Seeds, and should have a dry Soil and a warm Situation, where the Plants will continue several Years. It is a Plant of little Beauty or Use, so is only preserved for the Sake of Variety.

The 3d Sort is by Tournefort titled, *Oreoselinum Africanum Galbaniferum frutescens anisi folio.* African shrubby galbaniferous Mountain Parsley, with an Anise Leaf.

This Plant rises with an upright Stalk, to the Height of 8 or 10 Feet, which at Bottom is woody, having a purplish Bark, covered with a whitish Powder, which comes off when handled; the upper Part of the Stalk is garnished with Leaves at every Joint, the Foot Stalks half embracing them at their Base: The Foot Stalks branch out into several smaller, like those of the common Parsley, and are set with Leaves like those of Lovage, but smaller, and of a grey Colour; the Top is terminated by an Umbel of yellow Flowers, succeeded by oblong channeled Seeds, which have a thin Membrane or Wing on their Border. It flowers in August, but hath not produced Seeds in England. When any Part of the Plant is broken, there issues out a little thin Milk of a Cream Colour, which hath a strong Scent of Galbanum.

The 4th Sort, like the 3d, rises with a ligneous Stalk, about the same Height, and is garnished with Leaves at each Joint, which branch out like the former; but the small Leaves or Lobes are narrow and indented, like those of Bastard Hemlock. The Stalk is terminated by an umbel of small yellow Flowers, which are succeeded by Seeds like those of the former Sort.

These Plants are both Natives of Africa. I received the Seeds of them from the Cape of Good Hope, which succeeded in the Garden at Chelsea.

They are propagated by Seeds, which should be sown in Pots filled with light loamy Earth, as soon as they arrive; which, if it happens toward Autumn, should be plunged into a Bed of Tanners Bark, where the Heat is gone, and screened from Frost in Winter. In Spring the Plants will come up, and by the Middle of April will be fit to remove, when they should be carefully shaken out of the Pots, being careful not to tear off their Roots, and plant them each into a small Pot filled with the same Earth as before; then plunge the Pots into the Tan again, and water them to settle the Earth to the

Roots of the Plants, and shade them from the Sun in the Day Time, until they have taken new Root; after this they must be inured gradually to bear the open Air; into which they should be removed in June, and placed with other exotick Plants in a sheltered Situation, where they may remain till Autumn, when they must be removed into the Green-house, and placed where they may enjoy as much of the Sun and Air as possible, but defended from Frost.

In Winter these Plants should have but little Water given them, for much Wet is very injurious to them: In Summer, when they are exposed to the open Air, they must be frequently refreshed with Water in dry Weather; but at no Time should have too much Wet, for that will rot their Roots.

These Plants make a pretty Variety in the Green-house in Winter, and when they are placed abroad in the Summer with other Green-house Plants, they have a good Effect, especially when they are grown to a large Size. They generally flower the third Year from Seeds, but their Flowers are produced so late in Summer, that the Seeds have not Time to form before the Cold comes on in the Autumn; in warm Summers, the Plants may perfect their Seeds, if they stand in a warm sheltered Situation.

The Galbanum of the Shops is supposed to be procured from both these Sorts indifferently; for upon breaking their Leaves, the Juice which flows out from the Wound, hath a strong Odour of the Galbanum.

BUCKSHORN, or HARTSHORN. See Plantago.

BUDDING. See Inoculating.

BUDDLEJA. Houfl. Mss. Lin. Gen. Plant. 131.

The Characters are,

It hath a small permanent Empalement, slightly cut at the Top into five acute Parts. The Flower is one Leaf, Bell-shaped, and quadrifid, the Petal being stretched out beyond the Empalement; it hath four short Stamina, placed at the Divisions of the Petal, terminated by short Summits. The oblong Germen is situated in the Center, supporting a short Style, crowned by an obtuse Stigma; the Germen becomes an oblong Capsule, having two Cells filled with small Seeds.

The Species are,

1. **BUDDLEJA foliis ovatis serratis oppositis subtus pilosis, floribus spicatis racemosis, caule fruticoso.** Buddleja with oval sawed Leaves, growing opposite, which are hairy on their under Side, and Yellow Flowers growing in branching Spikes, and a shrubby Stalk.

2. **BUDDLEJA foliis lanceolatis acuminatis integerrimis oppositis, spicis interruptis, caule fruticoso ramoso.** Buddleja with pointed Spear-shaped Leaves which are entire, and placed opposite, broken Spikes, and a branching shrubby Stalk. *Buddleja frutescens foliis oblongis mucronatis, floribus spicatis albis.* Houfl. Mss. Shrubby Buddleja with white Flowers growing in Spikes.

The 1st Sort grows naturally in Jamaica, and most of the American Islands, where it rises to the Height of ten or twelve Feet, with a thick woody Stem, covered with a grey Bark; this sends out many Branches toward the Top, which come out opposite; as are also the Leaves, which are oval, and covered on their under Side with a brown hairy Down. At the End of the Branches the Flowers are produced in long close Spikes, branching out in Clusters, which are yellow, consisting of one

Leaf, cut into four Segments; these are succeeded by oblong Capsules, filled with small Seeds. This had the Title of *Buddleja*, in Memory of Mr. Buddle, an eminent English Botanist.

The 2d Sort was sent me from Carthage, where it grows naturally. This is the *Opbioxylon Americanum, foliis oblongis mucronatis, leviter serratis bardanae instar, subtus lanuginosis.* Pluk. Alm. 270.

This Sort rises much taller than the first, and divides into a great Number of slender Branches, covered with a Russet hairy Bark, and garnished with long Spear-shaped Leaves, ending in sharp Points: These grow opposite at every Joint; at the End of the Branches are produced branching Spikes of white Flowers, growing in Whorls round the Stalks, with small Spaces between each. This hath long narrow Spear-shaped Leaves growing between the Spikes; but those of the other Sort are naked. The Leaves are much thinner than those of the first Sort, and have scarce any Down on their under Side, the Spikes of Flowers grow more erect, so form a large loose Spike at the End of every Branch.

These Plants grow naturally in Gullies or other low sheltered Spots in the West-Indies, their Branches being too tender to resist the Force of strong Winds, so are rarely seen in open Situations.

They are propagated by Seeds, which should be obtained from the Countries where they naturally grow, for they do not perfect them in England. These should be brought over in their Capsules or Pods, for those which are taken out before they are sent seldom grow. They should be sown in small Pots, filled with rich light Earth, and very lightly covered with the same; for as these Seeds are very small, so if they are buried deep in the Ground, they perish. The Pots should be plunged into a moderate hot Bed, and must be every 3d or 4th Day gently watered, being very careful not to wash the Seeds out of the Ground, by too hasty watering them. If the Seeds are fresh and good, the Plants will come up in about six Weeks; and if they grow kindly, will be large enough to transplant in about a Month after. Then they should be carefully separated, and each planted in a separate small Pot, filled with light rich Earth, and plunged into the hot Bed again, observing to shade them from the Sun until they have taken new Root, as also to refresh them with Water, when they require it, but it must not be given in too large Quantities; for much Wet will certainly kill them, especially when young, as I have too often experienced. After the Plants have taken fresh Root in the Pots, there should be fresh Air admitted to them every Day, in Proportion to the Warmth of the Season; they must also be frequently, but moderately, refreshed with Water. If the Plants thrive well, they will have filled these small Pots with their Roots by the Middle of August, at which Time it will be proper to shift them into Pots one Size larger, that they may have Time to take good Root again, before the cold Weather comes on. When these are new potted, the Tan should be turned over, to renew the Heat, and if it is wanted, some fresh Tan must be added to the Bed, to encourage the Roots of the Plants. In this Bed they may remain till Autumn, when they must be removed into the Stove, and plunged into the Tan Bed; where they must constantly remain,

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main, for they are too tender to thrive in this Country, if they are not so treated. During the Winter they must have but little Water, and should be kept warm; but in Summer they should have fresh Air admitted to them constantly when the Weather is warm, and frequently sprinkled all over with Water. With this Management, the Plants will flower the 4th Year from Seeds, and every Year after; they make a good Appearance in the Stove.

BUGLOSSUM. See Anchusa, and Lycopsis.

BUGULA. *Tourn. Inst. R. H.* 208. *Tab.* 98. *Ajuga*. *Lin. Gen. Plant.* 624. Bugle.

The Characters are,

It hath a short permanent Empalement of one Leaf, which is slightly cut into five Parts; the Flower is of one Leaf, and of the Lip Kind, having an incurved cylindrical Tube, the upper Lip is very small, erect, and bifid; the under Lip or Beard is large, open, and divided into three obtuse Segments, the Middle being large, and the two Sides small; it hath four erect Stamina, two of which are longer than the upper Lip, and two shorter, terminated by double Summits. In the Center is situated the four Germen, supporting a slender Style the Length of the Stamina, and crowned by two slender Stigma. The Germen afterward become four naked Seeds inclosed in the Empalement.

The Species are,

1. *BUGULA foliis caulinis semialexicaulibus, solonibus reptatricibus.* Bugle whose Leaves half embrace the Stalks, and Shoots which put out Roots. Common Bugle; by *Linnaeus* it is titled *Ajuga solonibus reptatricibus*. *Sp. Plant.* 562.

2. *BUGULA foliis oblongo-ovatis, caulibus decumbentibus, verticillis distantibus.* Bugle with oblong oval Leaves, declining Stalks, and the Whorls of Flowers wide asunder. *Bugula folio maximo flore pallide caeruleo.* *Boerb. Ind.* Bugle with a large Leaf, and pale blue Flower; and the *Bugula Alpina maxima.* *Tourn. Inst.*

3. *BUGULA foliis obtuse-dentatis, caule simpliciter.* Bugle with blunt indented Leaves, and a single Stalk. This is the *Ajuga tetragono pyramidalis.* *Lin. Sp. Plant.* 561. *Ajuga* with a square pyramidal Spike.

4. *BUGULA foliis oblongis tomentosis, calycibus hirsutis.* Bugle with oblong woolly Leaves, and hairy Flower Cups. This is the *Bugula carneo flore.* *Clus. Hist.* 2. p. 43. Bugle with a Flesh coloured Flower.

5. *BUGULA villosa, foliis ovato-dentatis sessilibus, floribus resupinatis.* Hairy Bugle with oval indented Leaves, placed close to the Stalks, and inverted Flowers. This is the *Bugula orientalis villosa flore inverso candido cum oris purpureis.* *Tourn. Cor.* 14. Hairy Eastern Bugle with an inverted white Flower, having a purple Rim.

The 1st Sort grows naturally in Woods, and shady moist Places, in most Parts of England, where it spreads and increases greatly by the Side Shoots, which put out Roots at their Joints. There are two Varieties of this, one with a white, and the other a pale purple Flower, which I observed growing in several Parts of *Westmoreland*; but these do not differ in any other Respect than in the Colour of their Flowers from the common, therefore I have only mentioned them as Varieties.

The common Bugle is greatly esteemed as a vulnerary Herb, and is used both internally and externally; it enters as an Ingredient into the vulnerary Decoctions of the Surgeons, and is externally applied to Ulcers. This

is constantly mixed with the vulnerary Herbs, imported from *Switzerland*. It is titled *Consolida Media*, or Middle Consound. As this grows naturally wild in great Plenty, so it is seldom admitted into Gardens.

The 2d Sort grows naturally on the *Alps*, the Leaves are much longer than those of the common Bugle, the Stalks are weaker, and decline on every Side, and the Whorls of Flowers much smaller, and ranged at a greater Distance. This is admitted into some Gardens for Variety, and propagates in Plenty by its trailing Stalks. This requires a moist shady Situation.

The 3d Sort grows naturally in *France* and *Germany*, but is not a Native in *England*. This grows about 4 or 5 Inches high, with a single Stalk, which is garnished with Leaves at each Joint, placed opposite; these are oval, and indented bluntly on their Edges. The Flowers grows in Whorls round the Stalks, and toward the Top form a close thick Spike, of a fine blue Colour.

The 4th Sort grows naturally in many Parts of *Europe*. This resembles the common Bugle, but the Leaves are woolly, and the Flower Cups very hairy, in which the chief Difference consists. There are two Varieties of it, one with a white, and the other a red Flower.

The 5th Sort was brought from the *Levant* by *Dr. Tournefort*, and is preserved by the curious in collecting rare Plants. There are two or three Varieties of it, which only differ in the Colour of their Flowers.

This Sort requires a little Protection in Winter, therefore the Plants should be planted in Pots filled with a loamy Soil, and placed in a shady Situation in Summer; in Winter they must be removed under a common Frame, where they may enjoy as much free Air as possible in mild Weather; but in hard Frost should be covered, otherwise they will not live through the Winter, unless it proves very favourable. This may be propagated by Seeds, which should be sown soon after it is ripe, in a Pot filled with loamy Earth, and placed in a shady Situation till Autumn, when it should be removed under a Frame, where it may be screened from hard Frost. In the Spring the Plants will come up, which should be transplanted into separate Pots as soon as they are strong enough to remove, and, in Summer, placed in the Shade, and treated as the old Plants. It flowers in May, and the Seeds ripen the latter End of July. It may also be increased by Offsets, but this is a slow Method, because the Plants put out but few of them, especially while they are young, so the other Method is chiefly practised.

All the other Sorts are hardy enough, and are easily multiplied by their Side Shoots, these delight in a moist shady Situation, where they are apt to spread too much, especially the two first Sorts.

BULB [*Bulbus*, *Lat.* of *Βύβλος*, *Gr.*] Bulbous Roots are of two Sorts, viz. tunicated (or coated) and squamous (or scaly). A tunicated Root consists of many Coats, involving each other; as the Onion, Tulip, &c. whose Roots, if cut through the Middle, plainly shew the several Coats. A squamous Root consists of many Scales, lying over each other like Tiles upon a House, or Scales on Fish; as the Lily, Martagon, &c.

BULBINE. See Anthericum.

BULBOCASTANUM. See Bunium.

BULBOCODIUM. *Tourn. Lin. Gen. Plant.* 368.

The

The Characters are,

The Flower hath no Empalement, it is Funnel shaped, and composed of six Petals, which are concave, having long narrow Necks, connected at the Mouth, but are Spear-shaped above. It hath six Awl-shaped Stamina, shorter than the Petals, and are inserted in the Middle, having incumbent Summits. It hath an oval, blunt, three cornered Germen, supporting a slender Style, crowned by three oblong erect Stigma. The Germen becomes a triangular pointed Capsule, having three Cells filled with angular Seeds.

The Species are,

1. *BULBOCODIUM folis subulato-linearibus. Prod. Leyd.*

41. *Bulbocodium* with narrow Awl-shaped Leaves. This is the *Bulbocodium Alpinum juncifolium flore unico intus albo extus squallide rubente. Raii. Syn. Ed. 3. p. 374.* Alpine Rush-leaved *Bulbocodium* with a single Flower, white on the Inside, but of a dirty red on the Outside.

2. *BULBOCODIUM foliis lanceolatis. Bulbocodium* with Spear-shaped Leaves. This is the *Colchicum vernum Hispanicum. B. C. P. Spanish Spring Meadow Saffron.*

The first Sort grows naturally upon the Alps, and also upon Snowdon, in Wales. This hath a small bulbous Root, covered with a rough hairy Skin; it sends out a few long narrow Leaves, somewhat like those of the Saffron, but narrower; in the Middle of these the Flower comes out, which stands on the Top of the Foot Stalk, growing erect, and is shaped like those of the Crocus, but smaller; the Foot Stalk rises about three Inches high, and hath four or five short narrow Leaves placed alternately below the Flower. This flowers in March, and the Seeds are ripe in May, when in a Garden, but where it grows naturally it is much later.

The second Sort grows naturally in Spain, but hath been long cultivated in Gardens. It hath a bulbous Root, shaped like those of the Snowdrop, covered with a brown Skin, which sends out three or four Spear-shaped concave Leaves, between which comes out the Flower, standing on a very short Foot Stalk, and is composed of six Petals, three standing on the Outside, and three within between the other; these, when they first appear, are of a pale Colour, but afterward change to a bright purple; when these decay, they are succeeded by triangular Seed Vessels, full of small roundish Seeds. It produces Flowers in March.

These Plants are propagated by Offsets. The Time to remove them, is soon after their Leaves decay, but the Roots may be kept out of the Ground two Months without Prejudice at that Season. They should not be removed oftener than every third Year, for their Roots do not multiply very fast, so by suffering them to remain, they will flower much stronger, and make a greater Increase than if they are often taken up.

The first Sort requires an eastern Aspect, for if it hath too much Sun, it will not thrive; but the 2d should have a warmer Situation, so may be planted in a South Border, and they should have a fresh loamy Soil, but not dunged. They may also be propagated by Seeds, sown in Pots filled with fresh loamy Earth in September, and the latter End of October, the Pots should be placed under a Frame, to protect them from severe Frost; in Spring the Plants will appear, when they

may be removed out of the Frame, and placed where they may have the Morning Sun, but screened from the South. In very dry Weather, they should be refreshed now and then with a little Water, while their Leaves continue green, but, when these decay, the Pots should be removed to a shady Situation, where they may remain till Autumn, observing to keep them clean from Weeds. In October there should be a little fresh Earth laid on the Surface of the other, and the Pots placed in shelter again till the following Spring, when they must be treated as in the former Year till their Leaves decay, then the Roots should be carefully taken up, and transplanted into the Borders of the Flower Garden, treating them as the old Roots; the Spring following they will produce their Flowers.

BUNIAS. Lin. Gen. Plant. 737.

The Characters are,

The Empalement is composed of four oblong spreading Leaves, which fall away. The Flower hath four Petals, placed in Form of a Cross, which are oval, and double the Length of the Empalement, joined at their Base, and erect. It hath six Stamina, the Length of the Cup, two of which are opposite, and shorter than the other, terminated by erect Summits, which are bifid at their Base. In the Center is situated an oblong Germen, having no Style, but crowned by an obtuse Stigma. The Germen afterward becomes an irregular short oval Pod, with four Angles, one of which is prominent and pointed, inclosing one or two roundish Seeds.

The Species are,

1. *BUNIAS filiculis ovatis gibbis verrucosis. Lin. Sp. Plant. Bunias* with oval convex Pods, having Protuberances. This is the *Crambe Orientalis dentis leonis foliis erucae facie. Tourn. Eastern Sea Kale*, with Dandelion Leaves, and the Appearance of a Rocket.

2. *BUNIAS filiculis tetragonis angulis bicipitatis. Lin. Sp. Plant. Bunias* with short four-cornered Pods, whose Angles are doubly crested. This is the *Erucago Montpelierica siliqua quadrangula echinata. C. B. P. 99. Montpellier Erucago* with square echinated Pods.

3. *BUNIAS filiculis ovatis laevibus ancipitibus. Lin. Sp. Plant. 670. Bunias* with smooth oval Pods, standing on each Side the Stalk. This is the *Eruca maritima Italica, siliqua basae cuspidi simili. C. B. P. 99. Italian maritime Rocket*, with Pods resembling the Point of a Spear. *Cakile maritima ampliore folio. Tourn. Cor. 49.*

The first Sort grows naturally in the Levant, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris. This hath a perennial Root, and an annual Stalk, which decays in Autumn. It sends out many oblong Leaves, which spread on every Side near the Ground, and are deeply jagged on their Edges, like those of the Dandelion; from between these arise the Stalks, which grow upwards of two Feet high, sending out Branches on every Side, garnished at each Joint by one oblong sharp pointed Leaf, eared at the Base, where they sit close to the Stalk. The Branches are terminated by long loose Spikes of yellow Flowers, composed of four Leaves, shaped like those of the Cabbage; these are succeeded by short oval rough Pods, ending in a Point, inclosing one round Seed. It flowers in June, and the Seeds are ripe in September.

The 2d Sort grows naturally in the South of France and Italy, this is annual, and sends out many Branches

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on every Side, which spread, and incline toward the Ground. These are garnished with glaucous Leaves, deeply divided into many Parts, almost like those of Swines Cress. The Flowers are produced singly from the Wings of the Leaves, toward the Extremity of the Branches; these are very small, of a pale yellowish Colour, and composed of four Petals, placed in Form of a Cross, which are succeeded by short Pods, crested on each Side, containing one or two roundish Seeds.

The 3d Sort grows naturally about *Montpelier*; this also is annual, and sends out many oblong Leaves near the Root, which are deeply cut on each Side, are hairy, and spread on the Ground; between these arise two or three Stalks, which grow a Foot and a Half high, sending out several Side Branches, garnished with oblong rough Leaves, indented on their Edges; the upper Part of the Branches are destitute of Leaves, but have Flowers placed alternately on each Side the Branches, standing on short Foot Stalks, which are purple, and composed of four Petals; these are succeeded by oval pointed Pods, containing one or two roundish Seeds; there is a Variety of this with narrow Leaves.

These Plants are all propagated by Seed; the first Sort may be sown the beginning of *April* where the Plants are designed to remain; when they come up, they should be thinned, leaving them two Feet asunder, after which they require no other Care but to clean them from Weeds. The second Year they produce Flowers and Seeds; and the Roots abide many Years.

The other two Sorts must be sown where they are to remain, but the best Time is in Autumn, because those sown in Spring often fail, or do not perfect Seeds. These require no other Culture but to keep them clean from Weeds, and thin the Plants to one Foot Distance.

BUNUM. *Lin. Gen. Plant.* 298. *Bulbocastanum* *Tourn. Infl.* 312. *Tab.* 161. Pig Nut or Earth Nut.

The Characters are,

The great Umbel is composed of near 20 Rays or small Umbels, which are short, and close together. The involucre of the great Umbel, is composed of many short narrow Leaves, those of the smaller are the same, but are as long as the Umbels. The proper Empalement of the Flower is scarce discernable. The Rays of the great Umbel are uniform. The Flowers have 5 Heart-shaped Petals which are equal, and turn inward, they have 5 Stamina shorter than the Petals, terminated by single Summits; the oblong Germen is situated below the receptacle, supporting 2 reflexed Styles, crowned by a blunt Stigma. The Germen becomes an oval Fruit dividing in 2 Parts, containing 2 oval Seeds, plain on one Side, and convex on the other.

The Species are,

1. **BUNUM bulbo globofo.** *Savv. Monsp.* 256. Earth Nut with a globular Root. *Bulbocastanum majus, folio Apii.* *C. B. P.* 162. Greater Earth Nut, with a Parsley Leaf.

2. **BUNUM radice turbinato.** Earth Nut with a turbinated Root. *Bulbocastanum Creticum radice napi-formi* *Tourn. Cor.* Earth Nut of *Crete*, with a Turnep Root.

3. **BUNUM foliis tripartitis filiformibus linearibus.** Earth Nut with very narrow tripartite Leaves. *Bulbocastanum minus saxatile Peucedani folio.* *Tourn. Infl.* 312. Smaller Rock Earth Nut with a Sow Fennel Leaf.

The first Sort grows naturally in moist Pastures and Woods in many Parts of *England*; of this there is a Variety, supposed to be larger than that which grows commonly here, but I could never observe any essential difference between them; for in some Places it is found much larger than in others, but when they have been transplanted into a Garden, they have proved to be the same. This hath a tuberous solid Root which lies deep in the Ground, and puts out fibres from the Bottom and Sides. The Leaves are finely cut, and lie near the Ground. The Stalk rises a Foot and a Half high, which is round, channeled, and solid; the lower Part being naked, but above, where it branches out, there is one Leaf placed below every Branch, which are cut into finer Segments than those above: The Flowers are white, and shaped like those of other umbelliferous Plants; the Seeds are small, oblong, and when ripe are channeled. It flowers in *May*, and the Seeds ripen in *July*, soon after which, the whole Herb decays to the Ground.

The Roots of this sort are frequently dug up, and eaten raw by the poorer sort, having much Resemblance in Taste to the Chestnut, from whence it had the Title of *Bulbocastanum*. These Roots when boiled are very delicious, and supposed to afford great Nourishment. The Swine are very fond of these, and will root them up, when admitted where they grow, and soon become fat with feeding on them.

The 2d Sort was discovered by *Dr. Tournefort* in the Island of *Crete*, but it grows naturally in many Parts of the *Levant*. I received dried Samples and Seeds of this from *Zant*, where it grows plentifully.

The 3d Sort I received from the *Alps*. This is a very low Plant, seldom rising above six Inches high.

These Plants delight to grow among Grass, so cannot be made to thrive long in a Garden.

BUPHTHALMUM. *Lin. Gen. Plant.* 876. *Asteriscus.* *Tourn. Infl. R. H. Tab.* 285. Ox-eye.

The Characters are,

The Empalement is different in the several Species. It hath a compound radiated Flower, composed of hermaphrodite and female Florets. The hermaphrodite Flowers compose the Disk; these are Funnel-shaped, and cut into five Parts at the Brim, which spread open, and have five slender Stamina which are short, and terminated by cylindrical Summits; in the Center is situated an oval compressed Germen, supporting a slender Style, crowned by a thick Stigma. The Female Flowers which compose the Rays (or Border) are stretched out on one Side like a Tongue, which spreads open, and is indented at the Top in three Parts; these have no Stamina, but a double beaded Germen supporting a slender Style, crowned by two oblong Stigma. The Germen becomes a single compressed Seed, cut on each Side.

The Species are,

1. **BUPHTHALMUM colycibus foliosis, foliis cordatis serratis trinerviis basi line brevioribus.** *Hort. Upsal.* 264. Ox-eye with a leafy Empalement, Heart-shaped sawed Leaves, having three Veins, and the Base on one Side shorter than the other. This is the *Chrysanthemum Scrofulariae folio Americanum.* *Pluk. Alm.* 99. *Tab.* 22. f. 1. American Corn Marigold, with a Figwort Leaf.

2. **BUPHTHALMUM foliis lanceolatis subdenticulatis glabris, calycibus nudis.** *Hort. Cliff.* 415. Ox-eye with smooth

smooth Spear-shaped Leaves, (indented below) and naked Empalements. This is the *Asteroides Alpina foliis folio glabro*. Tourn. Cor. 51. Tab. 487. Bastard Aster of the Alps, with a smooth Willow Leaf.

3. BUPHTHALMUM *foliis lanceolatis subserratis villosis calycibus nudis*. Hort. Cliff. 414. Ox-eye with Spear-shaped Leaves, sawed below and hairy, and naked Empalements. *Aster luteus major*. C. B. P. 266. Greater yellow Starwort, with Leaves like Devil's Bit.

4. BUPHTHALMUM *calycibus acutis foliis, ramis alternis, foliis lanceolatis amplexicaulis integerrimis*. Hort. Cliff. 414. Ox-eye with acute leafy Empalements, Branches placed alternate, and entire Leaves embracing the Stalks. This is the *Asteriscus annuus foliis ad florem rigidis*. Tourn. Inst. 427. Annual Asteriscus, with rigid Leaves under the Flowers.

5. BUPHTHALMUM *calycibus acutis, caulibus glabris, foliis radicalibus oblongo-ovatis obtusis, petiolis longissimis*. Ox-eye with acute Empalements, smooth Stalks, and the lower Leaves oblong, oval, and blunt, and very long Foot Stalks. This is the *Asteriscus annuus flore minore clatior*. Tourn. Inst. 497. Taller annual Asteriscus, with a smaller Flower and rigid Leaves to the Empalement.

6. BUPHTHALMUM *floribus axillaribus calycibus foliosis, spinis terminalibus, foliis oblongis obtusis, sessilibus*. Ox-eye with Flowers coming from the Sides of the Branches, leafy Empalements ending with Spines, and oblong blunt Leaves growing close to the Branches. This is the *Asteriscus annuus maritimus patulus*. Tourn. Inst. 498. Annual spreading maritime Asteriscus.

7. BUPHTHALMUM *calycibus obtusis foliis pedunculatis, ramis alternis, foliis cuneiformibus*. Hort. Cliff. 414. Ox-eye with blunt leafy Empalements, having Foot Stalks, alternate Branches, and Wedge-shaped Leaves. This is the *Asteriscus maritimus perennis patulus*. Tourn. Inst. 498. Perennial spreading maritime Asteriscus.

8. BUPHTHALMUM *calycibus obtusis foliis sessilibus axillaribus, foliis oblongis obtusis*. Hort. Cliff. 414. Ox-eye with blunt leafy Empalements, sitting close to the Side of the Stalks, and oblong blunt Leaves. This is the *Asteriscus annuus Lusitanicus odoratus*. Boerb. Ind. alt. 145. Annual Portugal sweet scented Asteriscus.

9. BUPHTHALMUM *calycibus obtusis foliolis pedunculatis, axillaribus, foliis lanceolatis obtusis*. Ox-eye with a blunt leafy Empalement, having Foot Stalks coming from the Side of the Branches, and blunt Spear-shaped Leaves. This is the *Asteriscus aquaticus annuus patulus*. Tourn. Inst. 408. Spreading aquatic annual Asteriscus.

10. BUPHTHALMUM *foliis oppositis lanceolatis petiolatis bidentatis*. Hort. Cliff. 415. Ox-eye with Spear-shaped Leaves growing opposite, with Foot Stalks having two Teeth. This is the *Asteriscus frutescens leucoij foliis sericeis & incanis*. Hort. Elth. 44. Tab. 38. Shrubby Asteriscus with a silky hoary Stock-Gilliflower Leaf.

11. BUPHTHALMUM *foliis oppositis lineari-lanceolatis crassis, glabris, floribus pedunculatis*. Ox-eye with thick smooth, narrow, Spear-shaped Leaves growing opposite, and Flowers having Foot Stalks. This is the *Asteriscus frutescens leucoij foliis viridibus & splendentibus*. Hort. Elth. 43. Tab. 38. Shrubby Asteriscus, with green, shining, Stock-Gilliflower Leaves.

12. BUPHTHALMUM *foliis oppositis lineari-lanceolatis*

crassis incanis, floribus sessilibus. Ox-eye with thick smooth, narrow, Spear-shaped Leaves placed opposite, and Flowers growing close to the Branches. This is the *Asteriscus frutescens leucoij foliis angustissimis sericeis & incanis*. Ind. Hort. Chelf. 27. Shrubby Asteriscus with very narrow, hoary Stock-Gilliflower Leaves.

The first Sort grows naturally in North America; this hath a perennial Root, and an annual Stalk. From the Roots arise many Stalks, in Number proportional to the Size of the Roots; these grow upward of three Feet high, and are garnished at each Joint with two oblong Heart-shaped Leaves placed opposite, which have three longitudinal Veins, and the Base on one Side shorter than the other. The Flowers come out at the Extremity of the Branches, having a leafy Empalement; these are radiated and of a bright yellow Colour, resembling a small Sun Flower, from whence the Inhabitants of America have given it that Appellation. It flowers in July and August, and when the Autumns prove favourable, the Seeds will ripen in England; but as it propagates easily by parting the Roots, there are few Persons solicitous about the Seed. The best Time to transplant and part the Roots, is toward the End of October, when the Stalks begin to decay. These should be removed every other Year, to prevent their spreading too far; they are very hardy, so will thrive in any Situation; but as their Roots are apt to extend on every Side, so they are not proper for the Borders of the Flower Garden; but in large Borders on the Sides of rural Walks, or in Spaces between Shrubs, they will be ornamental during their Season of flowering.

The 2d Sort grows naturally on the Alps, also in Austria, Italy, and the South of France. This hath also a perennial Root, and an annual Stalk; it grows near two Feet high, with slender branching Stalks, which are garnished with oblong smooth Leaves ending in a Point; the Flowers grow at the Extremity of the Branches, of a bright yellow Colour, and radiated round their Borders like those of Starwort. It flowers in June and July, and the Seeds ripen in Autumn. There are two or three Varieties of this, differing in the Breadth of their Leaves and Size of their Flowers, but all these have been produced from the same Seeds.

This Sort is propagated by parting the Roots, which may be performed at the same Time, as directed for the 2d Sort. As this doth not spread so much, a few Roots may be allowed Room in the Borders of the Flower Garden, which have little Sun, where they will continue a long Time in flower.

The 3d Sort is somewhat like the 2d, but the Leaves are broader and obtuse; the Stalks and Leaves are also hairy, in which consists their Difference. This flowers at the same Time, and is propagated as the former.

The 4th and 5th Sorts have been supposed only Varieties of each other, but from many Years Experience, I could never find that either of them altered. The under Leaves of the fifth Sort have much longer Foot Stalks, and are rounder at their Extremity than those of the 4th; the Stalks are smoother, grow much taller, and the Branches extend much farther; and the Leaves of the Empalement are larger, but the Flowers

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Flowers are smaller, and these Differences are constant. There is a Variety of the 4th Sort, with Sulphur-coloured Flowers, which is changeable.

These are annual Plants, which grow naturally in the South of France, Italy, Spain, and Sicily. The 4th Sort rises a Foot and a Half high, but the 5th near twice that Height. Their Stalks divide into many Branches upward, and these Side Branches rise above the middle Stalk. They are garnished with Spear-shaped hairy Leaves, placed alternately; the Flowers are produced at the End of the Branches, on short Foot Stalks; the Empalement consists of seven long stiff Spear-shaped Leaves, ending in a sharp Point; these spread out to a great Distance beyond the Rays of the Flower, in Form of a Star. The Flower sits close upon the Empalement, the Border or Rays being composed of many female Florets, which have one Side stretched out like a Tongue, and indented at the End in three Parts; the Middle or Disk of the Flower, is composed of hermaphrodite Flowers, which are tubulous, Funnel-shaped, and slightly indented in five Parts at the Brim; they are of a bright yellow Colour, and are succeeded by oblong compressed Seeds. These Plants flower in June and July, and their Seeds ripen in September, soon after which the Plants decay.

The Seeds should be sown in April, on open Borders, where they are to remain, and only require to be kept clear of Weeds, and thinned to the Distance of a Foot and a Half, that their Branches may have Room to spread.

The 6th, 8th, and 9th Sorts, are also annual Plants, which grow naturally in the same Countries. These seldom grow more than one Foot high in Gardens, but where they are wild not so high; they send out many spreading Branches near the Root; these come out alternate, as also their Leaves, which are oblong, blunt, and hairy, growing close to the Branches without any Foot Stalks; the Leaves of the Empalement of the 6th Sort, end in a very sharp Spine, and are much broader at their Base than either of the other. The Flowers of all these have much the Appearance of those of the two last, but are smaller, and those of the 8th have an agreeable Odour. They flower at the same Season with the 4th and 5th, and are propagated in the same Manner.

The 7th Sort is a low perennial Plant, with a shrubby Stalk, which rarely rises a Foot high, sending out many spreading Branches from the Stem; these are garnished with hairy Leaves, very narrow at their Base, but broad and roundish at their Extremity; the Flowers are produced at the End of the Branches, which are yellow, and shaped like those of the former Sorts, but the Leaves of the Empalement are soft and obtuse. These are rarely succeeded by Seeds in England, but the Plant is easily propagated by Slips during the Summer Season; if the Cuttings are planted in a Bed of fresh loamy Earth, and covered with a Hand Glass, observing to shade them from the Sun in the Heat of the Day, and frequently refreshed with Water, they will take Root in about six Weeks, when they should be carefully taken up, and each planted in a small Pot filled with fresh undunged Earth, and placed in a shady Situation till they have taken fresh Root, after which

they may be removed to a sheltered Situation, where they may remain till the End of October, when they must be removed to a Frame for the Winter Season, being too tender to live abroad in Winter in this Country; but as they only require Protection from hard Frosts, so they will thrive better when they have a great Share of Air in mild Weather, than if confined in a Green-house. This Sort grows naturally in Sicily; it flowers great Part of the Year, which renders it the more valuable.

The 10th Sort rises with several woody Stems from the Root, which grow to the Height of eight or ten Feet, garnished with Leaves very unequal in Size, some of which are very narrow and long, others broad and obtuse; these are intermixed, sometimes coming out at the same Joint, and often at the intermediate one; they are soft, hoary, and placed opposite: The Foot Stalks of the larger Leaves have on their upper Side, near their Base, two sharp Teeth standing upward, and a little higher there are generally two or three more, growing on the Edge of the Leaves. The Flowers are produced at the Ends of the Branches single; these are of a pale yellow Colour, and have scaly Empalements. It grows naturally in America. I received another Sort of this from the Havannah, which was found growing naturally there by Dr. Houffoun, who sent it by the Title of, *Chrysanthemum fruticosum maritimum, foliis glaucis oblongis, flore luteo. Sloan. Hist. Jam.*

1. The Leaves of this are shorter and thicker than those of the 10th Sort, and have no Teeth on their Foot Stalks, but in other Respects are very like it, but the Plants are not so hardy. The 10th has been long preserved in the English Gardens, and was originally brought from Virginia, as I was informed by the Bishop of London's Gardener, who raised it in 1696 at Fulham.

The 11th Sort grows naturally in the Bahama Islands, from whence I received the Seeds. This seldom grows much more than three Feet high, sending out many Stalks from the Root, which are succulent, except near the Root, where they are ligneous: these are garnished with thick succulent Spear-shaped Leaves placed opposite; the Flowers are produced at the Branches upon Foot Stalks which are two Inches long. These Flowers are larger than those of the 10th Sort, and of a bright yellow Colour. They appear in July, August, and September, but often continue till the End of October. It also grows plentifully on the Borders of the Sea, at the Havannah.

The 12th Sort grows in the Bahama Islands, from whence I received the Seeds. This sends out many slender Stalks, which rise near three Feet high, and are garnished with long narrow thick succulent Leaves, very hoary, growing opposite, and embracing the Stalk at their Base; the Flowers are yellow, and are produced at the Ends of the Shoots, having very short Foot Stalks; they appear at the same Time with the 11th Sort.

As these three Sorts do not perfect their Seeds in this Country, so they are propagated by Cuttings. They should be planted in July, when the Plants have been for some Time exposed to the open Air, whereby their Shoots will be hardened and better prepared to take

Root, than when they first come abroad. The Cuttings should be planted in small Pots filled with light loamy Earth, and plunged into a very gentle Warmth, observing to shade them from the Sun in the Heat of the Day, and gently refresh them with Water, but it must be given to them sparingly, for much Wet will rot them. In about six Weeks these will have taken Root, when they must be gradually inured to bear the open Air, and soon after they should be each planted in a small Pot, filled with light loamy Earth, and placed in the Shade until they have taken fresh Root; after which they may be removed to a sheltered Situation, to remain till the Middle of October, when they must be removed into the Green-house. The 10th Sort being hardier than either of the other, may be placed in a common Green-house; but the other two will thrive better in a warm Glass-Cafe, where they will receive more Sun, and have a drier Air. During the Winter, they should have but little Moisture, and in very mild Weather should have fresh Air admitted to them. In Summer they must be placed abroad in a sheltered Situation, and treated as other exotick Plants.

BUPLEUROIDES. See Phyllis.

BUPLEURUM. Lin. Gen. Plant. 291. Tourn. Inst. 309. Tab. 163. Hare's-ear.

The Characters are,

It is a Plant with an umbellated Flower; the Rays of the principal Umbel are thin, consisting of ten smaller Umbels, erect and spread; the Involucrum of the great Umbel is composed of many oval pointed Leaves, those of the small have five. The Flower hath five small Heart-shaped Petals, inflexed; it hath five slender Stamina, terminated by roundish Summits. The Germen is situated below the Flower, supporting two small reflexed Styles, crowned by a small Stigma. The Germen becomes a roundish compressed Fruit channeled, dividing in two Parts, containing two oblong channeled Seeds, convex on one Side, and plain on the other.

The Species are,

1. **BUPLEURUM involucris universalibus nullis, foliis perfoliatis.** Hort. Upsal. 64. Hare's-ear, whose greater Umbel hath no Involucrum, and the Stalks growing through the Leaves. This is the *Perfoliata vulgarissima* fræ *arvensis*. C. B. P. 277. Most common or Field Thorough Wax.

2. **BUPLEURUM involucellis pentaphyllis orbiculatis, universalis triphylo ovato, foliis amplexicaulibus cordato-lanceolatis.** Lin. Sp. Plant. 236. Hare's-ear with the small Involucrums composed of five orbicular Leaves, the larger of three oval ones, and Heart Spear-shaped Leaves embracing the Stalk. This is the *Perfoliata Alpina angustifolia major anguloso*. C. B. P. Greater narrow-leaved Thorough Wax of the Alps, with an angular Leaf.

3. **BUPLEURUM involucellis pentaphyllis acutis, universalis triphylo, flosculo centrali altiore, ramis divaricatis.** Lin. Sp. Plant. 237. Hare's-ear with smaller Involucrums, composed of five pointed Leaves which are acute, those of the larger three-leaved, the Flower in the Center taller, and the Branches spreading from each other. This is the *Perfoliata minor angustifolia*, *Bupleuri folio*. C. B. P. 277. Smaller narrow-leaved Thorough Wax with a Hare's-ear Leaf.

4. **BUPLEURUM caule diebotomo subnudo, involucris**

minimis acutis. Lin. Sp. Plant. 238. Hare's-ear with Stalks growing from the Division of the Branches, which have no Leaves below, and a very small pointed Involucrum. This is the *Bupleurum folio rigido*. C. B. P. 278. Hare's-ear with a stiff Leaf.

5. **BUPLEURUM umbellis simplicibus alternis pentaphyllis subtrifloris.** Lin. Sp. Plant. 238. Hare's-ear with single Umbels growing alternate, and five Leaves under each three Flowers. This is the *Bupleurum angustissimo folio*. C. B. P. 278. Hare's-ear with a very narrow Leaf.

6. **BUPLEURUM frutescens, foliis obovatis integerrimis.** Lin. Sp. Plant. 238. Shrubby Hare's-ear, with oblong oval Leaves which are entire. This is the *Bupleurum arborescens salicis folio*. Tourn. Inst. 310. Tree-like Hare's-ear with a Willow Leaf. And the *Seseli Æthiopicum frutex*. Dod. Pempt. 312. Shrubby Hartwort of Ethiopia.

7. **BUPLEURUM frutescens, foliis vernalibus decompositis planis incis, æstivalibus filiformibus angulatis trifidis.** Lin. Sp. Plant. 238. Shrubby Hare's-ear, whose Spring Leaves are decomposed, plain and cut, and the Summer Leaves are narrow, angular, and trifid. This is the *Bupleurum frutescens foliis ex uno puncto plurimis juncis tetragonis*. Burman. Afr. 195. Tab. 71. fol. 1. Shrubby Hare's-ear, with many four angled rusty Leaves coming from one Point.

The 1st Sort grows naturally upon chalky Land amongst Wheat, in several Parts of England, so is seldom admitted into Gardens. The Leaves and Seeds of this Plant are used in Medicine; the Herb is esteemed good for dissolving scrophulous Tumours, and is by some used for internal Ailments, Ruptures, and Bruises from a Fall. This is an annual Plant.

The 2d, 3d, 4th, and 5th Sorts, are also annual. The 5th Sort grows naturally in several Parts of England, the others are Natives of the Alps and Pyrenees; these are seldom cultivated but in botanic Gardens for Variety. Those who are desirous to have any of these in their Gardens, should sow their Seeds in Autumn, where the Plants are designed to remain, for they do not bear transplanting well; and keep the Plants clean from Weeds. They flower in June and July and their Seeds ripen in September.

The 6th Sort hath a woody Stem, which sends out many Branches on every Side, so as to form a large Head. These are covered with a purplish Bark, garnished with oblong oval stiff Leaves, very smooth and of a Sea-green Colour; the Ends of the Branches are terminated by Umbels of yellow Flowers, somewhat like those of Fennel. These come out in August, but seldom perfect Seeds in England. It grows naturally in the South of France and Italy, near the Borders of the Sea, and is commonly known among Gardeners by the Title of Shrubby Ethiopian Hartwort. This grows five or six Feet high, forming a large regular Bush, and the Leaves continuing green through the Year, render it more valuable. It is hardy, so will live in the open Air, and may be intermixed with other ever-green Shrubs of the same Growth, in the Front of taller Trees, where their Stems are designed to be excluded from Sight, where they make an agreeable Variety. It is propagated by Cuttings, which should be planted in Pots filled with fresh loamy Earth, and in Winter sheltered under a hot Bed Frame; in Spring

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the Cuttings will put out Roots, but they will not be fit to transplant till the Autumn following; so the Pots should be placed in a shady Situation in Summer, and in dry Weather must be refreshed with Water. The young Plants may be planted in a Nursery Bed at two Feet Distance, for a Year or two to get Strength, and then transplanted where they are to remain.

The 7th Sort grows naturally at the *Cape of Good Hope*, from whence it was introduced to the Gardens in *Holland*. This rises with a shrubby Stalk five or six Feet high, sending out some Side Branches, which in Spring have their lower Parts garnished with Leaves composed of many small plain Lobes, finely cut like those of Coriander, and of a Sea-green Colour, these Leaves soon fall off, and the upper Part of the Branches are closely covered with long Rush like Leaves having four Angles, which come out in Clusters from each Joint. The Flowers grow in spreading Umbels at the Extremity of the Branches, which are small and of an herbaceous Colour, and are succeeded by oblong channelled Seeds.

This Sort is commonly propagated by Cuttings, which readily take Root, if planted in *April* in Pots filled with light Earth, and plunged into a moderate hot Bed; when they have taken Root, they should be inured to the open Air by Degrees, and having obtained Strength, may be planted each into a Pot filled with light loamy Earth, placing them in the Shade, till they have taken fresh Root, when they may be placed with other exotick Plants in a sheltered Situation, where they may remain till Autumn, when they must be removed into the Green-house, and placed with such hardy Plants as require a large Share of Air in mild Weather, and only require Protection from Frost.

If this Plant is propagated by Seeds, they should be sown in Autumn, soon after they are ripe, in Pots filled with light Earth, which must be sheltered under a Frame in Winter, and in Spring removed to a very gentle hot Bed, which will soon bring up the Plants; these must be inured to bear the open Air by Degrees, and then treated as those raised from Cuttings. This Plant flowers in *July*, and the Seeds ripen in *September*.

BURNET. See *Poterium* and *Sanguisorba*.

BURSA PASTORIS, Shepherds-pouch; is a common Weed, which propagates so fast by Seeds, as not to be easily cleared when they are permitted to shed; for there are commonly four Generations of this Plant from Seeds in a Year, so fast does the Seed ripen, and the Plants come up; therefore it cannot be too soon or carefully rooted out of a Garden.

BUTOMUS, Flowering-rush, or Water-gladiolus.

The Characters are,

The Flowers grow in a single Umbel, having a short three leaved Involucrum. The Flower hath six roundish concave Petals, which are alternately smaller and more pointed; it hath nine Awl-shaped Stamina, six of which surround the other, and are terminated by double lamellated Summits; it hath six oblong pointed Germen, supporting a single Stigma; the Germen afterward become six oblong pointed Capsules, having one Cell filled with oblong Seeds.

BUTOMUS, *Fl. Lap.* 159. The Flowering-rush or Water-gladiolus. This is the *Juncus floridus major*. *C. B. P.* 112. Greater Flowering-rush.

There are two Varieties of this Plant, one with a Rose coloured Flower, and the other with a white Flower; but these are only accidental Variations, therefore not to be enumerated as distinct Species.

The Rose coloured Sort is pretty common in standing Waters, in many Parts of *England*; the other is a Variety of this, though less common near *London*. These Plants may be propagated in boggy Places, or by planting them in Cisterns, which should be kept filled with Water, and about a Foot of Earth in the Bottom, into which the Roots should be planted, or the Seed sown as soon as they are ripe; these, though common Plants, yet produce very pretty Flowers, and are worth propagating for Variety's sake, especially if in any Part of the Garden there should be Convenience for an artificial Bog, or where there are Ponds of standing Water, as is many times the Case, and Persons are at a Loss what to plant in such Places, that may appear beautiful; whereas, if these, and a few more wild Plants, which naturally grow in such Places, were taken into the Garden, they would have a very good Effect in diversifying the several Parts of it.

BUXUS, The Box Tree.

The Characters are,

It hath male and female Flowers on the same Plant; the male Flowers have a three leaved, and the female a four leaved Empalement which are concave. The male Flowers have two, and the female three concave Petals, larger than the Empalement. The male Flowers have four upright Stamina, terminated by double erect Summits with a Rudiment of a Germen, but no Style or Stigma. The female Flowers have roundish, blunt, three cornered Germen, supporting three very short Styles, crowned by obtuse prickly Stigma. The Empalement becomes a roundish Capsule, shaped like an inverted Pottage Pot, opening in three Cells, each having two oblong Seeds, which are cast forth by the Elasticity of the Pod when ripe.

The Species are,

1. *Buxus arborescens, foliis ovatis*. Tree Box with oval Leaves.

2. *Buxus arborescens foliis lanceolatis*. Tree Box with Spear-shaped Leaves. This is the Narrow leaved Box.

3. *Buxus humilis, foliis orbiculatis*. Dwarf Box with round Leaves. This is the Dwarf or Dutch Box.

These are certainly three distinct Species. The two Sorts of Tree Box have been frequently raised from Seeds, and constantly produced Plants of the same Kind; the Dwarf Box will never rise to any considerable Height with any Culture, nor have I ever seen this Sort flower, where the Plants have been encouraged to grow many Years in the greatest Luxury. There are three Varieties of the first Sort, one with yellow, and the other white striped Leaves, the third hath the Tops of the Leaves only marked with yellow, which is called *Tiped Box*.

The 1st and 2d Sorts grow in great Plenty upon Box-bill near *Darling* in *Surry*, where were formerly large Trees of these Kinds; but of late they have been much destroyed; yet there are great Numbers of the Trees remaining, of a considerable size. The Wood of this Tree is very useful for Turners, Engravers, and Mathematical Instrument-makers, being

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so hard, close, and ponderous, as to sink in Water, which renders it very valuable for divers Utensils.

All the Varieties of the Tree or large Box are proper to intermix in Clumps of Ever-greens, &c. where they add to the Variety of such Plantations; these may be propagated by planting the Cuttings in Autumn in a shady Border, observing to keep them watered until they have taken Root; when they may be transplanted into Nurseries, till they are fit for the Purposes intended. The best Season for removing these Trees is in *October*, though indeed, if Care be used to take them up with a good Ball of Earth, they may be transplanted at any time, except in the Summer: They are a very great Ornament to cold and barren Soils, where few other Trees will grow; they may also be propagated by laying down the Branches, or from Seeds: The last is the best Method to have them grow large, the Seeds must be sown soon after

they are ripe in a shady Border, and duly watered in dry Weather.

The Dwarf Box is used for bordering Flower Beds, or Borders; for which Purpose it far exceeds any other Plant, being subject to no Injuries from Cold or Heat, and of long Duration, is very easily kept handsome, and, by the Firmness of its Rooting, keeps the Mould in the Borders from washing into the Gravel-walks, more effectually than any Plant whatever. This is increased by parting the Roots, or planting the Slips; but as it makes so great an Increase of itself, and so easily parts, it is hardly worth while to plant the Slips that have no Roots; it is now become so common, that it may be purchased from the Nurseries at a cheap Rate.

The manner of planting this in Edgings, &c. is so well known to every working Gardener, that it would be needless to mention any Thing of that Kind here.

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CAAPEBA. See *Cissampelus*.

CABBAGE. See *Brassica*.

CABINET, in a Garden, differs from an Arbour in this, that an Arbour or Summer-house is of a great Length, and arched over Head in the Form of a Gallery; but a Cabinet is either square, circular, or in Cants, making a Kind of Salon, at the two Ends, or in the Middle of a long Arbour.

CACALIANthemum. See *Cacalia*.

CACALIA. Foreign Coltsfoot.

The Characters are,

It hath compound Flowers, which are included in one common scaly Empalement, which is cylindrical: The Flowers are tubulous and Funnel-shaped, cut at the Top into five Parts which stand erect; these have each five short slender Stamina, terminated by cylindrical Summits. The Germen is crowned with Down, supporting a slender Style crowned by two oblong recurved Stigma; the Germen afterwards becomes single oblong Seed, crowned with long Down.

The Species are,

1. *CACALIA foliis reniformibus acutis denticulatis*. L. *Sp. Plant.* 836. *Cacalia* with Kidney-shaped Leaves, sharply indented. This is the *Cacalia foliis crassis birtutis*. C. B. P. 197. *Cacalia* with thick hairy Leaves.

2. *CACALIA foliis cordatis serratis glabris*. *Cacalia* with smooth Heart-shaped Leaves, and sawed Edges.

3. *CACALIA caule herbaceo foliis hastato-sagittatis denticulatis petiolis supernè dilatatis*. Hort. Upsal. 254. *Cacalia* with an herbaceous Stalk, Spear-shaped indented Leaves, the upper Side of the Foot Stalk spreading. *Cacalia Americana procerior, folio triangulari, floribus albis*. edit. Prior. Taller American *Cacalia* with a triangular Leaf eared at the Base, and white Flowers.

4. *CACALIA caule herbaceo, foliis subcordatis dentato-sinuatis, calycibus quinquefloris*. Lin. *Sp. Plant.* 835. *Cacalia* with an herbaceous Stalk, Heart-shaped sinuated Leaves, and five Florets in each Empalement. This is the *Nardus Americana procerior, foliis caespis*. Pluk. Alm. 251. Taller American *Nardus* with pale coloured Leaves.

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5. *CACALIA caule fruticoso, foliis compressis carnosiss.* Lin. *Sp. Plant.* 834. *Cacalia* with a shrubby Stalk, and fleshy compressed Leaves. This is the *Senecio Africanus arboreus, ficoidis folio & facie*. Com. Rar. Plant. 40. African Tree Groundsel with the Fig Marigold Leaf.

6. *CACALIA caule fruticoso composito, foliis lanceolatis planis, petiolorum cicatricibus obsolete*. Lin. *Sp. Plant.* 834. *Cacalia* with a compound shrubby Stalk, plain Spear-shaped Leaves, and the Foot Stalks having Scars. This is the *Cacaliantbemum folio nerii glauco*. Hort. Elth. 61. Tab. 54. *Cacaliantbemum* with a Sea-green Rosebay Leaf; and the *Arbor lavendulae folio*. I. B. Lavender-Leaf Tree.

7. *CACALIA caule fruticoso obvallato spinis petiolaribus truncatis*. Lin. *Sp. Plant.* 834. *Cacalia* with a shrubby Stalk, guarded on every Side with broken rough Foot Stalks. *Cacaliantbemum caudice papillari*. Hort. Elth. 63. Tab. 55. *Cacaliantbemum* whose Stalk is set with Nipples.

8. *CACALIA caule fruticoso, foliis ovato-oblongis, petiolis basi linea triplici deductis*. Lin. *Sp. Plant.* 834. *Cacalia* with a shrubby Stalk, oblong oval Leaves, and three Lines connected to the Base of the Foot Stalk. This is the *Kleinia foliis carnosiss planis ovato-oblongis*. Hort. Cliff. 395. *Kleinia* with oblong oval plain fleshy Leaves; and the *Anteuphorbium*. C. B. P. 387.

The 1st Sort grows naturally in *Austria*, and the *Helvetian* Mountains; but is frequently preserved in curious Gardens for Variety. This hath a fleshy Root which spreads in the Ground, from which springs up many Leaves, standing on single Foot Stalks, shaped like those of Ground Ivy, but of a thicker Texture, of a shining green on their upper Side, but white on their under Side; between these arise the Stalk, which is round, branching toward the Top, and grows a Foot and a Half high; under each Division of the Stalk is placed a single Leaf, of the same Shape with those below, but much smaller; the Branches are terminated by purplish Flowers, growing in a sort of Umbel. These are succeeded by oblong Seeds, crowned with Down.

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The 2d Sort hath the Appearance of the first, but the Leaves are Heart-shaped, pointed, and sharply sawed on their Edges, and on both Sides very green; the Stalks rise higher, and the Leaves on the Stalks have much longer Foot Stalks than those of the first. The Flowers are of a deeper purple Colour. This grows naturally on the *Alps*. They flower toward the End of *May*.

The 3d Sort grows naturally in *North America*, from whence the Seeds were brought to *England*. It hath a perennial creeping Root, sending out many Stalks in the Spring, garnished with triangular Spear-shaped Leaves, sharply sawed on their Edges, of a pale green on their under Side, but a deep shining green above, and placed alternately. The Stalks rise seven or eight Feet, and are terminated by Umbels of white Flowers, which are succeeded by oblong Seeds crowned with Down. It flowers in *August*, and the Seeds ripen in *October*. This Plant multiplies greatly by its spreading Roots, and also by the Seeds, which are carried to a great Distance by the Wind. The Roots of this Plant, which have been cast out of the *Cbelsea* Garden, have been carried by the Tides to a great Distance, where they have lodged on the Banks of the River, and fastened themselves to the Ground, and have increased so much, that in a few Years, it may be thought a Native of this Country. The Stalks decay in Autumn, and rise again in Spring.

The 4th Sort is a Native of *America*, but has been many Years in some curious Gardens. This hath a perennial Root, and an annual Stalk. The Root is composed of many fleshy Tubers, which spread every Way, and put out several strong Stalks in the Spring, which rise four or five Feet, and are garnished with roundish Heart-shaped Leaves, greatly indented on their Edges, of a Sea-green on the under Side, but darker above, placed alternately the Length of the Stalks; these are terminated by Umbels of yellowish herbaceous Flowers, appearing in *July* and *August*, and succeeded by Seeds like the former Sort, which ripen in *October*.

The 1st and 2d Sorts are propagated by parting their Roots, for they seldom produce good Seeds in *England*. The best Time to part and transplant them is in Autumn. They require a loamy Soil, and shady Situation.

The 3d and 4th Sorts propagate in great Plenty, both by their spreading Roots, and Seeds. The Roots should be transplanted in Autumn, and require a moist Soil, and an open Situation. If its Seeds are permitted to scatter, they will rise in Spring without Care.

The 5th Sort grows naturally at the *Cape of Good Hope*, from whence it was brought to *Holland*, and about the Year 1718, was introduced to the *English* Gardens. This rises with strong round Stalks, to the Height of seven or eight Feet, which are woody at bottom, but soft and succulent upward, sending out many irregular Branches, garnished more than half their Length, with thick taper succulent Leaves, a little compressed on two Sides, ending in Points, and covered with a whitish glaucous Farina, which comes off when handled. These, when broken, emit a strong Odour of Turpentine, and are full of a viscous Juice; at the Extremity of the Branches the Flowers are produced in small Umbels; they are white, tubulous, and

cut into five Parts at the Top. The Stigma which crowns the Style is of a dark purple Colour, and stands erect above the Tube. The Stamina are much shorter, and surround the oblong Germen, which is situated in the Center of the Tube, and crowned by long, white, hairy Down. The Germen becomes an oblong Seed, with the same Down adhering to it; but do not ripen in *England*. Some of the Noblemen in *France* have the Leaves of this Plant pickled, in doing which, they contrive to preserve the white Farina, with which they are covered, and thereby render them very beautiful.

This Sort is easily propagated by Cuttings, during the Summer Months: These should be cut from the Plants and laid to dry a Fortnight, that the Wound may be healed over before they are planted. Some plunge the Pots, in which they are planted, into a moderate hot Bed, to forward their putting out Roots; but if they are planted in *June*, or *July*, they will root as well in the open Air. I have had the Branches broken off by Accident, and fallen on the Ground, which have put out Roots without any Care. These Branches may be kept six Months out of the Ground, and will take Root if planted. This should have a light sandy Earth, and in Winter be placed in an airy Glass Case, where they may enjoy the Sun, and Air in mild Weather, but must be protected from Frost; during Winter, the Plants must have but little Water; and in Summer, when they are placed in the open Air, it should not be given them too often, nor in great Quantity, but treated like the *Ficoides*, and other succulent Plants. It flowers usually in Autumn, but is not constant to any Season.

The 6th Sort grows naturally in the *Canary Islands*, but has been long in the *English* Gardens. This rises with a thick fleshy Stem, divided at certain Distances, as it were in so many Joints; each of these Divisions swell much larger in the Middle, than they do at each End; the Stalks divide into many irregular Branches of the same Form, which, toward their Extremities, are garnished with long narrow Spear-shaped Leaves, of a glaucous Colour, standing all round the Stalks, without Order. As these fall off, they leave a Scar at the Place, which always remains on the Branches. The Flowers are produced in large Clusters, at the Extremity of the Branches, which are tubulous, and of a faint Carnation Colour. They appear in *August* and *September*, but continue great Part of *October*, and are not succeeded by Seeds in this Country. There have been Stones and Fossils dug up at a great Depth in some Parts of *England*, which have very perfect Impressions of this Plant upon them; from whence *Dr. Woodward* has supposed the Plants were lodged there at the universal Deluge; and finding the Impressions of many other Plants and Animals, which are Natives of those Islands, he concludes that the Waters flowed hither from the South-West.

This Plant has been called Cabbage Tree, by the Gardeners, from the Resemblance of its Stalks to those of the Cabbage: Others, Carnation Tree, from the Shape of the Leaves, and Colour of the Flowers.

It is propagated by Cuttings, as the former Sort, and the Plants require the same Culture; but must have a dry warm Glass Case in Winter, and very little Water,

ter, being very subject to rot with Wet. In Summer they must be placed in the open Air, in a warm sheltered Situation, and in very dry Weather refreshed moderately with Water. With this Management the Plants will flower annually, and grow to the Height of eight or ten Feet.

The 7th Sort resembles the 6th in its Form and Manner of Growth; but the Leaves are narrower and more succulent. These do not fall off entire like the other, but break off at the Beginning of the Foot Stalk, which are very strong and thick; and always continue, so that the main Stalk of the Plant, and the lower Part of the Branches, which are destitute of Leaves, are set round on every Side with these truncated Foot Stalks. This Sort hath not as yet produced Flowers in England. It is propagated as the two former Sorts, from Cuttings, and the Plants must be treated as the 5th Sort, but require to be kept drier, both in Winter and Summer; therefore, in very wet Seasons, the Plants should be sheltered from hard Rains, which often cause them to rot, when exposed thereto; but they require the open Air in Summer. This Sort grows naturally at the *Cape of Good Hope*.

The 8th Sort has been long preserved in the *English* Gardens, and was generally titled *Anteuphorbium*, supposing it to have a contrary Quality to the *Euphorbium*. This rises with many succulent Stalks, as large as a Man's Finger, which branch upward, into many irregular Stalks of the same Form but smaller, and are garnished with flat oblong succulent Leaves placed alternately round the Branches; under each Foot Stalk there are three Lines or Ribs, which run longitudinally through the Branches joined together. This Sort very rarely flowers in *Europe*, but is propagated by Cuttings as the 5th, and is equally hardy. It must have very little Wet, especially in Winter, and requires a dry sandy poor Soil.

CACAO. *Tourn. Inst. R. H.* 660. *Theobroma*. Lin. Gen. 806. The Chocolate Nut.

The Characters are,

The Empalement is composed of five Spear-shaped Leaves, which spread open. The Flower hath five Petals, which are irregularly indented, and spread open; it hath five erect Stamina, as long as the Petals, terminated by pointed Summits. In the Center is placed the oval Germen, supporting a single Style, the Length of the Stamina, crowned by an erect Stigma. The Germen afterward becomes an oblong Pod, ending in a Point, which is woody, warted, and divided into five Cells, filled with oval, compressed, fleshy Seeds.

We have but one Species of this Plant, which is,

CACAO. *Clus. Exot.* The Chocolate Nut Tree.

This Tree is a Native of *America*, and is found in great Plenty in several Places between the Tropicks, but particularly at *Carracca* and *Carthagera*, on the River *Amazons*, in the Isthmus of *Darien*, at *Honduras*, *Guatemala*, and *Nicaragua*. At all these Places it grows naturally without Culture, but is cultivated in many of the Islands possessed by the *French* and *Spaniards*, and was formerly planted in some of the Islands which are in the Possession of the *English*; but it has been neglected for many Years past, so that at present it is so scarce in those Places, that the *English* are supplied

by the *French* and *Spaniards*, who make the Inhabitants pay them a good Price for it; and as there is a great Quantity of it consumed in *England*, consequently it must make an Alteration in the Balance of Trade greatly to the Prejudice of the *English*; which might be easily remedied, if the Planters in our Colonies were but the least industrious; since, as it formerly grew on those Islands, so as to produce not only a sufficient Quantity for their own Consumption, but to supply *England* with great Quantities, there can be no Objection to the planting it in those Islands again, especially in Situations where the Sugar Canes do not thrive to Advantage.

I shall therefore subjoin the best Account of this Plant, and the Culture which it requires in those Countries, with the Profits which have arisen from it to those who have planted some of these Trees of late Years, by way of Experiment, in order to incite others to follow their Example; and shall afterward give Directions for cultivating it in *England*, by way of Curiosity.

In making a Plantation of Chocolate Trees, you must first be very careful in your Choice of the Situation, and Soil, otherwise there will be small Hopes of Success. As to Situation, it should be where the Trees may be protected from strong Winds, to which if they are exposed, they will soon be destroyed: In Places where Torrents of Water have washed away the Earth so as to leave broad and deep Furrows or Gullies, these Trees will thrive exceedingly; as these are very frequently to be found in those Islands, and many of them are of large Extent and not much cultivated, so it may be a great Improvement to some Estates, which, at present, are of small Value. The Soil in these Gullies is generally rich and moist, which is what these Trees require, so that they will make great Progress, as hath been experienced by those who have lately made Trials of the Plants in such Situations; but where there are not a sufficient Number of these Gullies, Choice should be made of a Situation well sheltered by large Trees; or, if there are not Trees already grown, there should be three or four Rows planted round the Spot designed for the Chocolate Trees, of such Sorts as are of quickest Growth; and within these Rows there should be some Plantain Trees, placed at proper Distances, which being very quick of Growth, and the Leaves very large, will afford a kindly Shelter to the young Chocolate Trees placed between them.

The Chocolate Trees which are cultivated, seldom rise higher than 14 or 15 Feet, nor do they spread their Branches very wide; so that if the Plantain Trees are placed in Rows, about twenty four Feet asunder, there will be Room enough for two Rows of Chocolate Trees between each Row of Plantains; and if they are planted at ten Feet Distance in the Rows, it will be sufficient Room for them. Those Trees which are found wild in uncultivated Places, are generally of much larger Growth, which may be occasioned by the Shelter of other Trees, among which these are found growing, being protected from the Winds by them, and the other Trees closely surrounding them, will naturally draw them up to a greater Height: However, that is not desirable in these Trees; for the lower they are, the better the Fruit may be gathered without hurting

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hurting the Trees, and the less they are exposed to the Injuries of the Weather; so that the Inhabitants never desire to have their Trees above 12 or 14 Feet high.

The Soil in which they thrive to most Advantage, is a moist, rich, deep Earth; for they generally send forth one Tap Root, which runs very deep into the Ground, so that where they meet with a rocky Bottom near the Surface, they seldom thrive, nor are they of long Continuance; but in a rich, deep, moist Soil, they will produce some Fruit the third Year from Seed, and continue fruitful for several Years after.

Before the Plantation is begun, the Ground should be well prepared by digging it deep, and clearing it from the Roots of the Trees, and noxious Plants, which, if suffered to remain in the Ground, will shoot up again after the first Rain, and greatly obstruct the Growth of the Plants; so that it will be almost impossible to clear the Ground from those Roots, after the Chocolate Plants are come up, without greatly injuring them.

When the Ground is thus prepared, the Rows should be marked out by a Line, and the Nuts planted in a quincunx Order, at equal Distances every Way, or the Plantain Trees between them may form a Quincunx, with the two Rows of Chocolate Trees, which are placed between each Row of them.

In making a Plantation of Chocolate Nut Trees, the Nuts must be planted where the Trees are to remain; for if they are transplanted, they seldom live; and those which survive, never make thriving Trees; for, as I before observed, these Trees have a tender Tap Root, which, if broken or injured, the Tree commonly decays.

The Nuts should always be planted in a rainy Season, or when it is cloudy Weather, and some Hopes of Rain falling soon after. As the Fruit ripens at two different Seasons, viz. at *Midsummer*, and at *Christmas*, the Plantation may be made at either of those; but the chief Care must be to choose such Nuts as are perfectly ripe and sound, otherwise the whole Trouble and Expence will be lost. The Manner of planting the Nuts is, to make three Holes in the Ground, within two or three Inches of each other, at the Place where every Tree is to stand; and into each of these Holes one sound Nut planted about two Inches deep, covering them gently with Earth. The Reason for putting in three Nuts at every Place is, because they seldom all succeed; or, if most of them grow, the Plants will not be all equally vigorous; so that when the Plants have had one Year's Growth, it is very easy to draw up all weak unpromising Plants, and leave the most vigorous; but in doing this, great Care should be had not to injure or disturb the Roots of the remaining Plants in drawing out.

It is very proper to observe, that the Chocolate Nuts will not retain their growing Faculty long after they are taken from the Trees, so that there is no Possibility of transporting them to any great Distance for planting; nor should they be kept long out of the Ground, in the natural Places of their Growth. There are some Authors who have written the History of this Tree, and distinguish three different Sorts of the Nuts, from the Colour of their Skins, one of which is of a

whitish-green Colour, one of a deep red, and the third of a red and yellow Colour; but these are not specifically different, but all arise from Seeds of the same Tree, as is the Case of our Filberts, which differ in the Colour of their Skins, but are of the same Colour within, and have the same Taste. There are others, who would distinguish these Nuts by their Size and Form, some being large and thick, others almost as flat as Beans; but these Differences (I have been credibly informed) arise from some Accident, as those Trees which are young and vigorous, and grow upon a deep rich Soil, will always produce larger and better nourished Fruit, than those which stand on a shallow dry Ground, and are unthriving Trees: The Age also of a Tree makes a great Alteration in the Size of the Fruit; for old Trees are generally observed to produce smaller and flatter Nuts than those which are young, or than the same Trees did bear while they were vigorous.

When the Chocolate Trees first appear above Ground, they are very tender, and subject to great Injuries from the strong Winds, the scorching Sun, or great Droughts, for which Reason the Planters are obliged to guard against all these Enemies, first, by making choice of a sheltered Situation, or by planting Trees to form a Shelter; and, if possible, to have the Plantation near a River, for the Convenience of watering the Plants the first Season, until they have made strong Roots, and are capable of drawing their Nourishment from some Depth in the Earth, where they meet with Moisture. But in order to shelter the Plants from the scorching Rays of the Sun, they generally plant two Rows of Cassada between each Row of Chocolate Trees, which will grow about seven or eight Feet high, and screen the young Plants from the Violence of the Sun, the first Season; after which Time they will be in less Danger of Injury therefrom; and the following Season, when the Cassada is taken up for Use, the Ground should be worked between the young Plants, being very careful not to injure their Roots by this Operation. This Method of planting the Cassada between the young Chocolate Trees, is of great Advantage to the Planter; for when the Roots of the Cassada are taken up for Use, it will defray the Expence of keeping the Ground clean from Weeds, without which the young Plants will come to nothing. The Plantains also, which will be fit to cut in about twelve Months after planting, will defray the whole Expence of preparing the Ground, so that the Produce of the Chocolate Trees will be neat Profit; for as the Plantains produce Fruit, and decay, they will be succeeded by Suckers, which will produce Fruit in eight Months after; whereby there will be a continual Supply of Food for the Negroes, which will more than pay for keeping the Ground wrought, and clear from Weeds, until the Chocolate Trees begin to produce Fruit, which is generally the third Year after planting.

The Planters usually set the Plantain Trees two or three Months before the Chocolate Nuts are ripe, that they may be large enough to afford Shelter to the young Plants when they come up; and the Cassada is always planted a Month or six Weeks before the Chocolate

chocolate Nuts, for the same Reason. Some plant Potatoes, others Cucumbers and Melons, or Water Melons, between the Rows of Chocolate Plants; which prevents the Weeds from rising to injure the young Plants; for as all these trail on the Ground, they occupy the whole Surface, and prevent the Weeds from growing: But where this is practised, it should be done with great Caution, lest you injure the young Chocolate Nuts so much, that they may never recover it; therefore great Care should be taken to reduce the Shoots of these Plants, whenever they approach the Chocolate Trees; otherwise they will soon greatly injure, if not totally destroy them.

In about seven or eight Days after the Chocolate Nuts are planted, the young Plants will begin to appear above Ground; when they should be carefully looked over, to see if any of them are attacked by Insects; in which Case, if the Insects are not timely destroyed, they will soon devour all the young Plants; and if there should be any Weeds produced near the Plants, they should be carefully cut down with a Hoe; in doing which, great Care should be taken that the tender Shoot, nor the Rind of the Bark are not injured. About twenty Days after the Plants have appeared, they will be five or six Inches high, and have four or six Leaves, according to their Strength. These Leaves are always produced by Pairs, opposite to each other, as are also the Branches; so that they make very regular handsome Heads, if not injured by Winds. In ten or twelve Months they will be two Feet and an Half high, and have 14 or 16 Leaves. By this Time the Cassada, which was planted between the Rows of Chocolate Plants, will have large Roots fit for Use; therefore should be taken up; and the Ground being then wrought over again, will greatly encourage the young Plants.

In two Years time the Plants will have grown to the Height of three Feet and a Half, or sometimes four Feet; many of which will begin to flower; but the careful Planters pull off all these Blossoms; for if they are permitted to remain to produce Fruit, they will so much weaken the Trees, that they seldom recover Strength again, so as to become vigorous. When these Plants are two Years and a Half old, they will produce Flowers again; some of which are often left to bear Fruit; but the most curious Planters pull off all these, and never leave any to produce Fruit until the 3d Year; and then but a few, in Proportion to the Strength of the Trees; by which Method, they always produce larger and better nourished Fruit, than those which are suffered to bear a larger Quantity; and will continue much longer in Vigour. The 4th Year they suffer their Trees to bear a moderate Crop; but they generally pull off some Flowers from those which are weak, that they may recover Strength before they are too old.

From the time the Flowers fall off, to the Maturity of the Fruit, is about four Months. It is easy to know when the Fruit is ripe, by the Colour of the Pods, which become yellow on the Side next the Sun. In gathering the Fruit, they generally place a Negro to each Row of Trees; who, being furnished with a Basket, goes from Tree to Tree, and cuts off all those which are ripe, leaving the others a longer time to

ripen. When the Basket is full, he carries the Fruit, and lays it in a Heap at one End of the Plantation; where, after they have gathered the whole Plantation, they cut the Pods lengthways, and take out all the Nuts; being careful to divest them of the Pulp which closely adheres to them; and then they carry them to the House, where they lay them in large Casks, or other Vessels of Wood, raised above-ground, and cover them with Leaves of the *Indian* Reed and Mats, upon which they lay some Boards, putting some Stones thereon to keep them down close, in order to press the Nuts. In these Vessels the Nuts are kept four or five Days; during which Time, they must be stirred and turned every Morning; otherwise they will be in Danger of perishing from their great Fermentation. In this Time they change from white to a dark red or brown Colour. Without this Fermentation, they say the Nuts will not keep; but will sprout, if they are in a damp Place, or shrivel and dry too much, if exposed to Heat.

After the Nuts have been thus fermented, they should be taken out of the Vessels and spread on coarse Cloths, and exposed to the Sun and Wind; but at Night, or in rainy Weather, they must be taken under Shelter, otherwise the Damp will spoil them. If the Weather proves fair, three Days time will be long enough to dry them, provided they are carefully turned from Time to Time, that they may dry equally on every Side. When they are perfectly dry, they may be put up in Boxes or Sacks, and preserved in a dry Place until they are shipped off, or otherwise disposed of. The fresher these Nuts are, the more Oil is contained in them; so that the older they are, the less they are esteemed.

These Trees do not produce their Fruit on the young Branches, or at their Extremities, as most other Trees do; but from the Trunk, and the larger Branches, come out the Buds for Flowers and Fruit. While the Trees are young, they do not produce Fruit in great Plenty; for before they are eight Years old, they reckon it a good Crop to have twenty-eight or thirty Pods on each Tree at one Gathering, especially that at *Midsummer*; which is always a much worse Crop than the *Christmas* Season, occasioned by the much greater Drought of the Spring; Autumn being the rainy Season. When the Trees are full grown and vigorous, they will sometimes produce two hundred, or two hundred and forty Pods, at one Season; which will make ten or twelve Pounds of Chocolate, when dried; so that it is a very profitable Commodity, and can be managed with very little Charge, when compared with Sugar. I have been credibly informed by a Person of great Worth and Integrity, who resided some Years in *America*, that he has seen as much Chocolate gathered from one Tree in a Year, as hath been worth thirty Shillings *sterling* on the Spot: So that the Trouble of gathering, and preparing for the Market, being much less than for many other Commodities which are manufactured in the *British* Colonies, it is surprising it should be neglected; especially as it yields so large a Share of Sustenance to the wealthier Inhabitants of those Colonies, that they cannot live comfortably without it; and purchase it from the *French* and *Spaniards* at a considerable Price.

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The Chocolate Trees, if planted on a good Soil, and properly taken care of, will continue vigorous and fruitful twenty-five or thirty Years: Therefore the Charge of cultivating a Plantation of these Trees, must be much less than that of Sugar; for although the Ground between the Rows of Plants will require to be often hoed and wrought, yet the first working of Ground to make a new Plantation of Sugar, Indigo, Cassia, &c. is a larger Expence. Besides, Sugar Canes require as much Labour in their Cultivation, as any Plant whatever; and since the Insects which destroy the Canes, have spread so much in the *British* Colonies, nothing is a more uncertain Crop than Sugar; for which Reason, I think it would be greatly worth those Planters Care, who are possessed of proper Lands for the Chocolate Trees, to make some small Trials, to be convinced of the Truth of this Fact.

The Leaves of these Trees being large, make a great Litter upon the Ground when they fall; but this is not injurious, but rather of Service to the Trees; for the Surface of the Ground being covered with them, they preserve the Moisture, prevent its evaporating, and are of great Use to the young tender Roots, which are just under the Surface; when the Leaves are rotten, they may be buried in digging the Ground, and will make good Manure. Some Planters let the Pods, in which the Chocolate is inclosed, lie and rot in a Heap (after they have taken the Nuts out) which they also spread on the Ground instead of Dung. Either of these Manures are very good, provided they are well rotted before they are laid on the Ground; and great Care should be had, that no Vermin be carried on the Plantation with the Dung.

Besides the ordinary Care of digging, hoeing, and manuring the Plantations of Chocolate Trees, it is also requisite, in order to their doing well, to prune the decayed Branches off, and to take away small ill placed Branches, where-ever they are produced. But you should be cautious how this Work is performed; for there should be no vigorous Branches shortened, nor any large Amputations made on these Trees; because they abound with a soft glutinous milky Juice, which will flow out for many Days where they are wounded, which greatly weakens the Trees. However, the Branches whose extreme Parts are decayed, should be cut off, to prevent the Infection from proceeding farther; and such Branches as are much decayed, should be taken off close to the Stem of the Tree; this should be performed in dry Weather, soon after the Crop of Fruit is gathered.

Some may imagine, that what I have directed, is a tedious laborious Work, and not to be performed by a few Slaves: But this is a great Mistake, for I have been credibly informed, that five or six Negroes will cultivate a Plantation of ten thousand of these Trees, provided they are properly instructed; which is a small Number, when compared to the Quantity necessary to cultivate a Sugar Plantation of the like Extent of Ground. And when the Profits of both are compared, there will be a great Difference: For, supposing we set the Price of five Shillings, *per Ann.* for the Produce of each Tree, when grown, (which I am of Opinion is very moderate, considering what has been related); then a Plantation of ten thousand Trees will produce twenty-five hundred

Pounds a Year; which, managed by six or seven Negroes, without the Expence of Furnaces, &c. is a much greater Profit than, I think, can be drawn from any other Production.

In order to cultivate this Plant in *Europe*, by way of Curiosity, it will be necessary to have the Nuts planted into Boxes of Earth (in the Countries where they grow) soon after they are ripe; because, if the Nuts are sent over, they will lose their growing Quality, before they arrive. These Boxes should be placed in a shady Situation, and must be frequently watered, in order to forward the Vegetation of the Nuts. In about a Fortnight after the Nuts are planted, the Plants will begin to appear above-ground; when they should be carefully watered in dry Weather, and protected from the violent Heat of the Sun, which is very injurious to these Plants, while they are young: They should also be kept very clear from Weeds; which, if suffered to grow in the Boxes, will soon overbear and destroy the Plants. When they are grown strong enough to transport, they should be shipped and placed where they may be screened from strong Winds, salt Water, and the violent Heat of the Sun. During their Passage they must be frequently refreshed with Water; but it must not be given them in great Quantities, lest it rot the tender Fibres of their Roots, which will destroy the Plants; and when they come into a cool Latitude, they must be carefully protected from the Cold, when they will not require so frequently to be watered: For in a moderate Degree of Heat, if they have gentle Waterings once a Week, it will be sufficient.

When the Plants arrive in *England*, they should be carefully taken out of the Boxes, and each transplanted into a Pot filled with light rich Earth, and plunged into a moderate hot Bed of Tanners Bark; being careful to cover the Glasses in the Heat of the Day, to screen the Plants from the Sun: They must also be frequently watered; but it must be done with Caution, not to rot their Roots. In this hot Bed the Plants may remain till *Michaelmas*, when they must be removed into the Bark Stove, and plunged into the Tan, in the warmest Part of the Stove. During the Winter Season the Plants must be frequently refreshed with Water; it must be given in small Quantities; but in Summer they will require a more plentiful Share. These Plants are too tender to live in the open Air in this Country, even in the hottest Season of the Year; therefore must constantly remain in the Bark Stove, observing in very warm Weather, to let in a large Share of fresh Air to them, and in Winter to keep them very warm. As the Plants increase in Bulk, they should be shifted into larger Pots; in doing which, particular Care must be taken not to tear or bruise their Roots, which often kills the Plants; nor must they be placed in Pots too large; because that is a slow, but sure Death to them. The Leaves of these Plants must be frequently washed, to clear them from Filth; which they are subject to contract by remaining constantly in the House; and this becomes an Harbour for small Insects, which will infect the Plants, and destroy them, if not timely washed off. If these Rules are duly observed, the Plants will thrive very well, and may produce Flowers in this Climate: But it will be very difficult to obtain Fruit from them; for, being of

a very tender Nature, they are subject to many Accidents in a cold Country.

CACHRYS. Tourn. Inst. 325. Lin. Gen. Plant. 304. We have no English Name for this Plant.

The Characters are,

It hath an umbellated Flower, the great or general Umbel being composed of many smaller; the Involucrum of both is composed of many narrow Spear-shaped Leaves; the great Umbel is uniform. The Flower hath five Spear-shaped erect Petals, which are equal. It hath five single Stamina the Length of the Petals, terminated by single Summits. The turbinate Germen is situated under the Receptacle, supporting two Styles crowned by roundish Stigma. The Empalement afterward becomes a large oval blunt Fruit dividing in two Parts, each having one large fungous Seed, convex on one Side, and plain on the other.

The Species are,

1. CACHRYS foliis pinnatis, foliolis linearibus trifidis, fructu laevi. Cachrys with very narrow pinnated trifid Leaves and a smooth Fruit. This is the Cachrys semine fungoso laevi foliis Ferulaceis. Mor. Umb. 62. Cachrys with a smooth fungous Seed, and Giant-fennel Leaves.

2. CACHRYS foliis pinnatis, foliolis linearibus planis acutis, fructu rugoso. Cachrys with narrow, plain, pinnated acute Leaves, and a rough Fruit. This is the Cachrys semine fungoso sulcato aspero, foliis peucedani latiusculis. Mor. Umb. 62. Cachrys with a fungous furrowed rough Seed, and broadish Hog's-fennel Leaves.

3. CACHRYS foliis pinnatis foliolis acutis multifidis. Lin. Sp. Pl. 246. Cachrys with pinnated, multifid Leaves, which are acute. Cachrys semine fungoso sulcato, plano minore foliis peucedani. Mor. Umb. 62. Cachrys with a smaller, plain, furrowed Seed, and Hog's-fennel Leaves.

4. CACHRYS semine fungoso sulcato plano majore foliis peucedani angustis. Mor. Umb. 62. Cachrys with a large, plain, fungous, furrowed Seed, and narrow Hog's-fennel Leaves.

5. CACHRYS foliorum impari lobato, hirsuto, semine fungoso sulcato plano. Cachrys with hairy Leaves, terminated with an odd Lobe, and a plain fungous channeled Seed. Cachrys Ungarica Panacis folio. Tourn. Hist. 325. Hungarian Cachrys with an All-heal Leaf.

The 1st sort hath a thick fleshy Root which strikes deep in the Ground; from which springs out many narrow winged Leaves resembling those of Giant-fennel, which spread near the Ground, from between these arise a hollow fungous Stalk about two Feet high, terminated by a large Umbel of yellow Flowers, which are succeeded by oval smooth fungous Fruit, dividing into two Parts, each inclosing an oblong Seed.

The 2d Sort hath a large firm sweet smelling Root, which sends out several pinnated Leaves like those of Hog's-fennel, but shorter. The Stalk is smooth jointed, rises four or five Feet high, and is terminated by large Umbels of yellow Flowers, like those of Dill; these are succeeded by oblong fungous channeled Seeds which are rough.

The 3d Sort hath a thick fleshy Root like Fennel, which runs deep in the Ground, sending out several narrow pinnated Leaves, ending in many Parts; between these arises a smooth jointed Stalk, about three Feet high, terminated by large Umbels of Flowers, and succeeded by smaller fungous plain Seeds which are furrowed.

The 4th Sort hath very thick Roots, which strike deep in the Ground, sending out very narrow pinnated Leaves, like those of Hog's-fennel. The Stalk rises 5 or 6 Feet, and is jointed like those of Fennel, terminated by large Umbels of yellow Flowers, which are succeeded by large oval fungous Seeds, deeply furrowed.

The first Sort grows naturally in the South of France and Spain; the second and third in Italy; the fourth in Sicily, and the fifth in Hungary.

These Plants are all propagated by Seeds, sown soon after they are ripe; for if kept out of the Ground until Spring, they often miscarry; and when they succeed, never come up until the Spring after; so that if sowing them in Autumn, a whole Year is saved, and they seldom miscarry. These Seeds should be sown on a shady Border, where the Plants are to remain; for the Plants, having long Tap Roots, will not bear transplanting so well as many other Kinds. The Distance for sowing their Seeds should be three Feet apart; so that if each Kind is sown in a Drill, when the Plants come up, they may be thinned; leaving two of the most promising Plants of each Kind to remain. These Plants will begin to appear early in April, when they must be carefully cleared from Weeds; and in dry Weather should be gently watered, which greatly promotes their Growth the first Year; after which they will require no farther Care but to keep them clean from Weeds, and every Spring to dig the Ground carefully between them, so as not to injure the Roots.

These Plants decay to the Ground every Autumn, and come up again in Spring: They commonly flower the Beginning of June, and their Seeds are ripe in September: Their Roots sometimes run down three or four Feet deep in the Earth, provided the Soil be light, and are often as large as Parsneps: They will continue many Years, and if the Soil is moist and rich, they will annually produce good Seeds; but when they grow on a dry Soil, the Flowers commonly fall away, and are not succeeded by Seeds.

The Hungarians in the Neighbourhood of Erlaw, and those who border on Transylvania, Servia, &c. eat the Root of the fifth Species, in a Scarcity of Corn, for want of other Bread.

CACTUS. Lin. Gen. Pl. 539. Melocactus. Tourn.

The Characters are,

The Empalement of the Flower is of one Leaf, tubulous, short, and cut into six Parts. The Flower is composed of six Petals, which spread open at Top, and rests upon the Embryo; it hath six long slender Stamina, terminated by erect Summits. The oval Germen which is situated below the Petals, supports a cylindrical Style, crowned by a blunt Stigma; it becomes a pyramidal fleshy Fruit with one Cell, filled with small angular Seeds surrounded with Pulp.

The Species are,

1. CACTUS subrotundus quatuordecem angularis. Hort. Cliff. 181. Roundish Cactus with fourteen Angles. This is the Melocactus Indiae occidentalis. C. B. P. 384. and the Echinomelocactus. J. B. 3. 93. Hedgehog Melon Thistle, commonly called Great Melon-thistle.

2. CACTUS subrotundus quindecim angularis, angularis in spiram intortis, spinis erectis. Roundish Cactus or Melon Thistle, with fifteen Angles spirally twisted, and erect Spines. Melocactus purpureus striis in Spiram intortis.

toris. Plum. Purple Melon Thistle with Spiral intorted Ribs.

3. *CACTUS subrotundus quinquedecem angularis, spinis latis recurvis creberrimis*. Roundish Melon Thistle with 15 Angles, and broad recurved Spines set very close.

4. *CACTUS subrotundus quatuordecem angularis, spinis longis recurvis albidis*. Roundish Melon Thistle with 14 Angles, and long white recurved Spines.

5. *CACTUS subrotundus testus tuberculis ovatis barbatis* Hort. Cliff. 181. Roundish *Caëtus* closely covered with bearded Tubercles. *Melocactüs Americana minor*. Boerb. Ind. alt. 2. 84. Smaller American Melon Thistle.

6. *CACTUS proliiferus subrotundus, testus tuberculis ovatis, barbatis longis albidis*. Roundish prolifick *Caëtus* with oval Tubercles closely joined, having long white Beards, commonly called Small Childing Melon Thistle.

These Plants are Natives of the *West-Indies*, where there are more Sorts than are here enumerated. There have been about four of the large Kinds brought to *England*, some of which have been crowned with a prickly brown Cap, in Form of one of those Fur Caps, which are worn by the *Turks*; and others, which have been destitute of these Caps, although the Plants were full as large as those which had them; therefore some Persons have supposed them to be distinct Species, especially since these have been many Years preserved in Gardens, and no Appearance of any Caps as yet have been produced; but as these have not been propagated by Seeds, it is difficult to determine, if they are essentially different. Those which have Caps, produce their Fruit in Circles round the upper Part of the Cap; whereas the smaller Sorts produce their Fruit from between the Tubercles, round the Middle of the Plant; and in some Figures of the larger Sorts, the Fruit is represented as coming out near the Crown of the Plant; so that if a skilful Botanist was to examine these Plants in the Places of their Growth, there would probably be found a much greater Variety than is at present known.

These strange Plants commonly grow upon the steep Sides of Rocks in the warmest Parts of *America*, where they seem to be thrust out of the Apertures of the Rocks, having little or no Earth to support them, their Roots shooting down into the Fissures of the Rock to a considerable Depth, so that it is troublesome to get the Plants up, especially as they are so strongly armed with Thorns as to render it very dangerous to handle them; as these Plants delight in rocky Places, they seldom live long when they are transplanted into better Soil.

The great Sorts were formerly brought over in much greater Plenty than of late; but the greatest Part of them were destroyed by the Unskilfulness of those who had the Care of them in the Voyage; for, by giving them Water, they generally caused them to rot before they were landed; and some of those which appeared to be sound, have been so replete with Moisture, as to rot soon after they were placed in the Stoves; therefore whoever proposes to bring these Plants from Abroad, should be very careful to take up their Roots as entire as possible, and to plant them in Tubs filled with Stones and Rubbish, mixing very little Earth with it, and to put three or four Plants in each Tub, in Proportion to their Sizes; for if they are placed close together, it will save Room; and as they do not increase

in their Growth during their Passage, there need not be any Room allowed them for that Purpose. There should be several Holes bored through the Bottom of these Tubs, to let the Moisture pass off; and if they are placed in the Tubs, a Month before they are put on board the Ship, they will in that Time have made new Roots, which will be the most secure Method to have them succeed; during their Continuance in the Country, they should have no Water, unless the Season should prove very hot and dry; and, in that Case, it should be given sparingly; but after they are put on board the Ship, they must not have any Moisture whatever; therefore it will be a good Method to cover the Plants with Tarpaulin, to keep off the Spray of the Sea in bad Weather, and to expose them at all Times to the open Air, when the Sea is calm. By observing these Directions, the Plants may be brought to *England* in good Health, provided they are brought in Summer.

Some of the large Plants which have been brought to *England*, have been more than a Yard in Girth, and near two Feet high, including their Caps; but I have been informed by several Persons who have resided in the *West-Indies*, that there are Plants near twice as large.

The 3d Sort was brought to *England* by Dr. William Housfoun, who procured the Plants from *Mexico*; but as they had a long Passage, and received Wet, they were decayed before they arrived, from the Remains of them which were left, they appeared to be the most singular of all the Species yet known. This has two Orders of Thorns; one of which are strait, and set on at the Joints in Clusters, spreading out from the Center each Way like a Star; and in the Middle of each Cluster is produced one broad flat Thorn, near two Inches in Length, which stands erect, is recurved at the Point, and of a brownish red Colour. These Thorns are, by the inhabitants of *Mexico*, set in Gold or Silver, and made use of for picking their Teeth; and the Plant is by them called *Visuaga*, i. e. Toothpick.

The Sort with spiral Ribs, and that with white Spines, I received from *Antigua*, with the common Sort; but whether these are only accidental Varieties, arising from the same Seeds, or real different Species, I cannot take upon me to determine, since, in this Country, they are very rarely propagated by Seeds; nor could I observe, in the several Years I have had these Plants under my Care, there was the least Disposition in either of them to produce Fruit; when, at the same Time, the common large Sort produced Plenty of Fruit out of their Caps every Year, from the Seeds of which I raised some young Plants; but although some of these have grown to a considerable Size, yet none of them have as yet produced Caps, and consequently no Fruit.

The 5th Sort produces Quantities of Fruit annually; and as the Seeds grow very readily, it is now very common; for if the Fruit is permitted to drop upon the Earth of the Pots, and that is not disturbed, Plenty of Plants will come up without any farther Trouble; these Seedling Plants may be taken up as soon as they are of a proper Size to remove, and planted 6 or 7 of them into a small Halfpenny Pot, where they may stand one Year; by which Time they will be large enough to be each planted in a separate Pot, and afterward they will

make great Progress, especially if they are plunged into a hot Bed of Tanners Bark in Summer; for although this Sort is much more hardy than the large Kind, and may be preserved in a moderate Stove, yet the Plants will not make near the Progress as those which are kept in a greater Degree of Heat. This Sort will continue many Years with proper Care, and the Plants will grow a Foot high, or more; but when they are so tall, the lower Part of them is not so lightly, their Green being decayed, and the Spines changed to a dark dirty Colour, they appear as if dead; so that the upper Part of these old Plants only seem to have Life; whereas the Plants of middling Size appear healthy from Top to Bottom. The Flowers appear in *July* and *August*; these are succeeded by Fruit quite round the Plant, which are of a fine scarlet Colour, and continue fresh on the Plants through the Winter, which renders them very beautiful at that Season. In Spring, when the Fruit shrivels, and becomes dry, the Seeds will be ripe, and may then be rubbed out, and sown upon the Surface of the Earth in small Pots; which should be plunged in a hot Bed of Tanners Bark to bring up the Plants.

The 6th Sort is but little larger than the 5th, growing nearly in the same Form; but produces a great Number of young Plants from the Sides, by which it is increased. This Sort produces Tufts of a soft white Down, upon the Knobs, and also between them at every Joint; which makes the whole Plant appear as if it was covered with fine Cotton. The Flowers of this Sort are produced from between the Knobs, round the Sides of the Plants; which are in Shape and Colour very much like those of the 5th Sort, but larger. These Flowers are not succeeded by Fruit, at least all those under my Care, although they have produced Plenty of Flowers for some Years; but from the same Places where the Flowers have appeared, young Plants have thrust out the following Season. These young Plants I have taken off, and laying them to dry for two or three Days, I have planted them, and they succeeded very well.

All the Species of this Genus are Plants of a singular Structure; but especially the larger Kinds of them, which appear like a large fleshy green Melon, with deep Ribs, set all over with strong sharp Thorns, and when the Plants are cut through the Middle, their Inside is nothing but a soft, green, fleshy Substance, very full of Moisture. I have been assured by Persons of Credit, who lived in the *West-Indies*, that in Times of great Drought, the Cattle repair to the barren Rocks, which are covered with these Plants, and after ripping up the large Plants with their Horns, so as to tear off the outside Skin with the Thorns, they have greedily devoured all the fleshy moist Parts, which afforded them both Meat and Drink; but how any Animal should attack Plants, so well defended by strong Thorns, which are as hard and stiff as Whalebone, or any other bony Substance, is difficult to conceive; nor could any Thing but Distress for Moisture tempt them to venture among these troublesome Plants to search for Relief, since they must encounter with many Difficulties, before they could find a Method of dislodging the Thorns.

The Fruit of all the Sorts of Melon Thistles, are eaten by the Inhabitants of the *West-Indies*; there is scarce any Difference in the Fruits of all the Kinds I have yet

seen, either in Size, Shape, Colour, or Taste. They are about three Quarters of an Inch in Length, of a taper Form, drawing to a Point at the Bottom next the Plant, but blunt at the Top, where the Empalement of the Flower was situated. The Taste is an agreeable Acid, which is grateful in a hot Country.

All the Sorts of these Plants require a very good Stove to preserve them through the Winter in *England*; nor should they be exposed to the open Air in Summer, for although they may continue fair to outward Appearance, when exposed abroad, yet they will imbibe Moisture, which will cause them to rot soon after they are removed into the Stove. This is frequently the Case of those Plants which are brought from Abroad, which have a fair healthy Appearance at their first Arrival, but soon after decay, and this happens very suddenly; scarce any Appearance of Disorder will be seen, till the whole Plant is killed; which, in a few Hours Time, has often been their Fate, when they have been placed in the Stove.

If these Plants are plunged into a hot Bed of Tanners Bark in Summer, it will greatly forward them in their Growth; but when this is practised, there should be scarce any Water given to the Plants, for the Moisture which they will imbibe from the Fermentation of the Tan, will be sufficient, and more would cause them to rot. The best Method to preserve all the large Kinds is, in Winter, to place the Pots, either upon the Top of the Flues, or, very near them, that they may have the warmest Place of the Stove; and during that Season, never give them any Water, but when the Season comes for leaving out the Fire in the Stove, to remove them into a Bed of Tanners Bark, which will soon set them in a growing State, and recover their Verdure. The Soil in which these should be planted, must be of a sandy Nature, and if mixed with some dry Lime Rubbish, it will be still better. In the Bottom of the Pots should be placed some Stones, in order to drain off any Moisture which may be in the Earth; for as these Plants naturally grow upon the hot dry burning Rocks, which have no Earth, and, were it not for these Plants, would be absolutely barren, we must imitate their natural Soil as near as possible, making some Allowance for the Difference of Climate.

The great Sorts may be propagated by Seeds; which must be sown and managed, as the smaller Sort; but as the Plants which are raised from Seeds in *England*, will be some Years in arriving to any considerable Size, it will be much the best Way to procure some Plants from the *West-Indies*; and if they arrive here in any of the Summer Months, that there may be Time for them to get new Root before the Cold comes on in Autumn, they will more certainly succeed. When the Plants come over, it will be proper to take them out of the Earth as soon as possible, and lay them in the Stove, upon the Shelves, to dry 3 or 4 Days; and when they are planted, they should be plunged into a good warm Bed of Tanners Bark, to promote their making new Roots. In this Bed they may remain till the Beginning of *October*, when they must be removed into the Stove, and treated in the Manner before directed.

The two small Sorts propagate so fast in *England*, as to render it unnecessary to Import them; for whoever

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hath a mind to be stocked with them, may be soon supplied; the 5th Sort from Seeds, and the 6th from the young Plants thrust out from the Side of the old.

CÆSALPINA. *Plum. Nov. Gen. 9.* Brasiletto.

This Plant was named by Father Plumier, who discovered it, in Honour of Andreas Cæsalpinus, an eminent Botanist, one of the first Writers on a Method of classing Plants.

The Characters are.

It hath an Empalement of one Leaf, which is cut into five Segments; the two upper being equal, the two lateral Segments are smaller, and the lower one (or Keel) large and fringed. The Flower hath five Petals, situated like those of the Butterfly Flowers. It hath ten declining Stamina which are distinct, and terminated by roundish Summits. It hath an oblong Germen supporting a single Style the Length of the Stamina, crowned by a blunt Stigma. The Empalement afterward becomes an oblong compressed Pod, with one Cell inclosing three or four compressed Seeds.

The Species are,

1. **CÆSALPINA foliis duplicato-pinnatis, foliolis emarginatis, floribus decandris.** Cæsalpina with doubly winged Leaves, whose small Leaves are indented at the End, and Flowers with ten Stamina. This is the *Pseudo-santalum croceum*. *Sloan. Hist. Jam.* Saffron-coloured Bastard Saunders, commonly called Brasiletto.

2. **CÆSALPINA foliis duplicato-pinnatis foliolis ovatis integerrimis floribus pentandris.** Cæsalpina with doubly winged Leaves, whose small Leaves are oval and entire, and Flowers with five Stamina. This is the *Cæsalpina polyphylla aculeis horrida*. *Plum. Nov. Gen. 28.* Many leaved Cæsalpina with horrid Thorns.

The 1st Sort is the Tree which affords the Brasiletto Wood, much used in Dying. It grows naturally in the warmest Parts of America, from whence the Wood is imported, and the Demand for it has been so great, that there are no Trees left in any of the British Colonies, exceeding 8 Inches in Diameter, and 15 Feet in Height. It hath very slender Branches armed with recurved Thorns. The Leaves are winged, branching out into many Divisions, each being garnished with small oval Lobes indented at the Top, and placed opposite. The Foot Stalks of the Flowers come out from the Side of the Branch, and are terminated by a loose pyramidal Spike of white Flowers, shaped somewhat like those of the Butterfly Kind, having ten Stamina much longer than the Petals, and terminated by roundish yellow Summits. The Germen becomes a long compressed Pod, with one Cell inclosing several oval flat Seeds.

The 2d Sort grows naturally in the same Countries with the first, but is of larger Size: It sends out many weak irregular Branches, armed with short strong upright Thorns. The Leaves branch out in the same Manner, but the Lobes (or small Leaves) are oval and entire. The Flowers are produced in long Spikes, and are variegated with red: These have each but five Stamina, therefore, according to Linnaeus's System, should not be ranged in this Class; but as in all the other Characters they agree, I have continued them together.

These Plants are propagated by Seeds, which should be sown in small Pots filled with light rich Earth early in the Spring, and plunged into a hot Bed of Tanners Bark, observing to water the Earth as often as it appears dry, in order to promote the Vegetation of the

Seeds; and if the Nights should prove cold, the Glasses of the hot Bed should be covered with Mats, to keep the Bed in a moderate Warmth. In about six Weeks after, the Plants will begin to appear, when they must be carefully cleared from Weeds, and frequently refreshed with Water; and, in warm Weather, the Glasses of the hot Bed should be raised in the middle of the Day, to admit fresh Air to the Plants, which will greatly strengthen them, otherwise they are apt to draw up weak. When the Plants are about 3 Inches high, they should be carefully taken out of the Pots, and each transplanted into a separate small Pot filled with fresh light Earth, and plunged into the hot Bed again, observing to water, and screen them from the Heat of the Sun, until they have taken new Root; after which, the Glasses of the hot Bed should be raised every Day, in Proportion to the Heat of the Weather, to admit fresh Air to the Plants; and they must be duly watered, and kept clear from Weeds. In this hot Bed the Plants may remain till Autumn, when they should be removed into the Stove, and plunged into the Bark Bed, where they may have Room to grow. These Plants being tender, should always be kept in the Bark Stove, and have a moderate Share of Heat in the Winter; and being placed among other tender exotick Plants of the same Country, will afford an agreeable Variety.

CAINITO. See Chrysophyllum.

CAKILE, Sea Rocket. See Bunias.

CALABA, Indian Mastich Tree. See Cornus.

CALAMINTHA. See Melissa.

CALCEOLUS, Ladies Slipper. See Cypripedium.

CALENDULA. *Lin. Gen. Pl. 885.* *Caltha.* Tourn. *Calendula, Rati Meth. Plant. 36.* Marigold.

The Characters are,

It hath a compound radiated Flower, consisting of hermaphrodite and female Florets, included in a common single Empalement, the Border or Rays being composed of female Florets, which are stretched out on one Side like a Tongue, which forms the Ray; these have no Stamina, but an oblong three cornered Germen, supporting a slender Style, crowned by two reflexed Stigma. The hermaphrodite Flowers, which are in the Center, and compose the Disk, are tubulous and quinqued, having five short slender Stamina terminated by cylindrical Summits. The Germen is situated under the Petal, supporting a slender Style crowned by an obtuse bifid Stigma. These Flowers are barren, but the female Flowers are each succeeded by one oblong incurved Seed, with angular Membranes.

The Species are,

1. **CALENDULA foliis linearilanceolatis semiamplexicaulibus, seminibus echinatis.** Marigold with narrow Spear-shaped Leaves, half embracing the Stalk, and prickly Seeds. *Caltha arvensis.* C. B. P. Field Marigold; and *Caltha minima.* I. B. The least Marigold.

2. **CALENDULA foliis lanceolatis glabris, radiis florum latioribus minimè dentatis.** Marigold with smooth Spear-shaped Leaves, the Rays of the Flower broad, and a little indented. This is the *Caltha media folio longo cinereo, flore pallido.* Bob. Middle Marigold with a long Ash-coloured Leaf, and a pale Flower.

3. **CALENDULA seminibus radii cymbiformibus echinatis, divici bicornibus.** Hort. Cliff. 425. Marigold with Boat-shaped prickly Seeds in the Border, and those in the

the Center bicorned. *Caltha vulgaris*. Common Marigold.

4. *CALENDULA foliis lanceolatis denticulatis, pedunculis filiformibus*. Hort. Upsal. 274. Marigold with Spear-shaped indented Leaves, and slender Foot Stalks. This is the *Caltha Africana flore intus albo extus violaceo*. Tourn. Inst. R. H. 499. African Marigold with a Flower white within, and Violet Colour without.

5. *CALENDULA foliis lanceolatis sinuato-dentatis caule nudo*. Lin. Sp. Plant. 922. Marigold with sinuated indented Spear-shaped Leaves, and a naked Stalk. This is the *Caltha Africana flore intus albo, extus leviter violaceo, semine plano cordato*. Boerb. Ind. alt. 1. p. 113. African Marigold with a Flower white within, a light Violet Colour without, and flat Heart-shaped Seeds.

6. *CALENDULA foliis lanceolatis dentatis pedunculis supernè incrassatis*. Hort. Cliff. 274. Marigold with indented Spear-shaped Leaves, and the upper Part of the Foot Stalk swelling. This is the *Cardispermum Africanum pubescens*. Vaill. Mem. Acad. Sc. 1724. African Heart Seed with downy cut Leaves and a small Flower.

7. *CALENDULA foliis linearibus subintegerrimis caule subnudo*. Lin. Sp. Plant. 922. Marigold with narrow entire Leaves, and a naked Stalk. This is the *Caltha Africana foliis Croci angustis, florum petalis externè purpureiscentibus, internè albis*. Boerb. Ind. alt. 1. p. 113. African Marigold with narrow Saffron Leaves, the Petals of the Flower purplish without, and white within.

8. *CALENDULA foliis obversè ovatis denticulatis, caule fruticoso perenni*. Prod. Leyd. 531. Marigold with obverse oval indented Leaves, and a perennial shrubby Stalk.

9. *CALENDULA foliis oppositis pinnatifidis asperis, subtus incanis, ramis decumbentibus, pedunculis nudis*. Marigold with rough pinnatifid Leaves, growing opposite, which are white on their under Side, trailing Branches, and naked Foot Stalks. *Caltha Americana flore luteo*. Houst. American Marigold with cut Leaves, and a yellow Flower.

10. *CALENDULA caule erecto ramofo, foliis oblongis oppositis hirsutis, floribus lateralibus*. Marigold with an upright branching Stalk, oblong hairy Leaves growing opposite, and Flowers proceeding from the Sides of the Stalk. This is the *Caltha Americana erecta, & hirsuta, flore parvo ochroleuco*. Houst. Mss.

The 1st Sort grows naturally in the South of France, Spain, and Italy; it rises with a slender branching Stalk, which spreads near the Ground, and is garnished with narrow, Spear-shaped, hairy Leaves, half surrounding the Stalk at their Base; the Flowers are produced at the Extremity of the Branches, upon long naked Foot Stalks; these are very small, and of a pale yellow Colour; the Rays are very narrow, as are also the Leaves of the Empalement. The Seeds are long, narrow, and on their Outside armed with Prickles. The Root is annual, and perishes soon after the Seeds are ripe. If the Seeds are permitted to scatter, there will be a fresh supply of young Plants: So that from May, when the Flowers first appear, till the Frost puts a Stop to them, there will be a Succession of Plants in flower. Several Botanists suppose the common Marigold, cultivated in Gardens, to be only a Variety of this, arising from Culture; but I have cultivated this in the Garden more than thirty Years, without finding the least Alteration; therefore cannot doubt of its being a distinct Species.

The 2d Sort I gathered in the Garden at Leyden, where it had been several Years cultivated without altering; the Leaves are smooth, and much larger than those of the former, but not so large as those of the common Marigold; the Flowers are of a middle Size between them, of a very pale yellow Colour. This is also an annual Plant; if the Seeds are permitted to scatter, there will be a constant Supply of young Plants.

The 3d Sort is the common Marigold, which is cultivated for Use in the Gardens; this is so well known, as to require no Description. Of this there are the following Varieties; the common single; the double flowering; the largest very double Flower; the double Lemon-coloured Flower; the greater and smaller Childing Marigold.

These Varieties are supposed to have been originally obtained from the Seeds of the common Marigold; but these Differences continue, if the Seeds are properly saved; nor have I ever observed the common Sort approaching to either of these, where they have been long cultivated in the greatest Plenty; but as the two childing Marigolds, and the largest double, are subject to degenerate, where Care is not taken in saving their Seeds, so I conclude they are not distinct Species. The best Way to preserve these Varieties, is to pull up all the Plants, whose Flowers are less double, as soon as they appear, that they may not impregnate the others with their Farina, and save the Seeds from the largest and most double Flowers; the childing Sort should be sown by itself, in a separate Part of the Garden, and the Seeds saved from the large Center Flowers only, not from the small ones, which come from the Empalement, for the Seeds of these are apt to change.

The Seeds may be sown in March or April, where the Plants are to remain, and will require no other Culture, but to keep them clean from Weeds and thin the Plants, leaving them ten Inches asunder, that their Branches may have Room to spread. These Plants will begin to flower in June, and continue until the Frost kills them. The seeds ripen in August and September, which, if permitted to scatter, will furnish a Supply of young Plants in the Spring; but as these will be a Mixture of bad and good, so the best Method is to save the best Seeds, and sow each of the Varieties distinct, which is the sure Way to have them in Perfection.

The 4th Sort grows naturally at the Cape of Good Hope, from whence the Seeds were first brought to Holland, and from thence have communicated to most of the curious Gardens in Europe. This Plant is annual, and perishes soon after the Seeds are perfected.

The lower Leaves are oblong, Spear-shaped, and deeply indented on their Edges; they are fleshy, and of a pale green Colour. The Stalks are produced on every Side the Root, which decline toward the Ground, and are from six to eight Inches long, which are garnished with Leaves from the Bottom, to within two Inches of the Top. The Leaves on the Stalks are much narrower, and more indented than those at the Root. The upper Part of the Stalk is very slender, upon which rests one Flower, shaped like those of the common Marigold, having a purple Bottom; and the Rays (or Border) of the Flower are of a Violet Colour on their Outside, and of a pure white within; these open when the Sun shines, but shut up in the Evening, and remain so in cloudy

cloudy Weather; when the Flower decays the Pedicle (or Foot Stalk) becomes weak, and the Head hangs down, during the Formation and Growth of the Seeds; but when they are fully ripe, the Foot Stalk rises again, and the Head of the Seeds stand upright.

The 5th Sort is a Native of the *Cape of Good Hope*. This is also an annual Plant, and has much the Appearance of the former, but the Leaves are more deeply indented; the Stalks grow about the same Length; the Flower is a little smaller, and the Outside of the Rays of a fainter purple Colour. The Seeds of this are flat and Heart-shaped, but the former long and narrow.

The 6th Sort was brought from the same Country, and is also an annual Plant, the Leaves are much longer than those of either the former Sorts, and broader at the End; they are regularly indented near the Root, but those on the Stalks have but few and shallow Indentures. The Stalks are much longer and thicker than those of the former; and at the Top, just above the Flower, swell larger than below; the Flower is smaller than those of the other Sorts, but is of the same Colour. These Plants flower in *June, July, and August*, and their Seeds ripen about six Weeks after; so that they must be gathered at different Times, as they come to Maturity.

The Seeds of these Plants should be sown in Spring, in Borders, where the Plants are designed to remain, for they do not bear transplanting well; therefore they may be treated in the same Manner, and sown at the same Time, with Candy Tuft, Venus Looking Glass, and other hardy annual Plants, putting 4 or 5 Seeds in each Patch; if they all grow, there should not be more than two Plants left; after this they require no farther Care, but to keep them clean from Weeds. If the Seeds of these Plants are permitted to scatter, the Plants will come up without Care; and these will flower earlier than those which are sown in the Spring.

The 7th Sort is a Native of the same Country. This is a perennial Plant, which divides near the Root, into several tufted Heads, closely covered with long grassy Leaves, coming out on every Side without Order; some of these have one or two Indentures on their Edges; but the most Part are entire. From between the Leaves arise naked Foot Stalks, about nine Inches long, sustaining one Flower at the Top, about the Size of the common Marigold, having a purple Bottom; the Rays are also purple without, but of a pure white within. These expand when the Sun shines, but always close in the Evening, and in cloudy Weather. The general Season of their Beauty is in *April and May*, when they have the greatest Number of Flowers upon them; but there is a Succession of Flowers till late in the Autumn, though not in so great Plenty. This Sort doth not often produce good Seeds in *Europe*, but it is easily propagated by Slips taken off from the Heads, in the same Manner as is practised for Thrift. They may be planted any Time in Summer, in Pots filled with light fresh Earth, which may be plunged into a very moderate hot Bed, to forward their putting out Roots, or the Pots may be sunk in the Ground up to their Rims, and covered with a Melon Glass, which, in the Middle of Summer, will answer full as well, but in the Spring or Autumn, the former Method is to be preferred: When these are planted, the Glasses

must be shaded in the Heat of the Day, and the Slips must be frequently refreshed with Water, but it must not be given them too liberally, for much Wet will rot them: after they have got strong Roots, they should be each planted into separate small Pots, filled with fresh light Earth, and placed in a shady Situation, till they have taken fresh Root, when they may be placed in the open Air, in a sheltered Situation, where they may remain till Autumn, and then should be placed in a dry airy Glass Case, for the Winter Season, or under a common hot Bed Frame; for these Plants do not thrive in artificial Heat, they only require Protection from Frost and Wet, and should enjoy the Air at all Times when the Weather is mild. The Seeds of this Sort are Heart-shaped, like those of the 5th. I have had one or two Heads of them ripen in a Season, but this is rare; and if the Seeds are not sown in Autumn, they seldom grow.

The 8th Sort has been introduced into the *Dutch Gardens* from the *Cape of Good Hope*. This was sent me by Dr. *Van Royen*, Professor of Botany at *Leyden*. It hath a slender, shrubby, perennial Stalk, which rises to the Height of seven or eight Feet, but requires Support; it sends out a great Number of weak Branches, from the Bottom to the Top, which hang downward, unless supported; they are garnished with oval Leaves, having short flat Foot Stalks; most of these are slightly indented toward the Top, and many of them are entire; they are of a shining green Colour on their upper Side, but paler underneath; the Flowers come out at the End of the Branches, on short naked Foot Stalks, and are in Size and Colour like those of the 6th Sort; these are sometimes succeeded by flat Heart-shaped Seeds. The Flowers appear all the Summer.

This is easily propagated by Cuttings, which may be planted any Time in Summer in a shady Border, or otherwise shaded with Mats in the Heat of the Day: In five or six Weeks, these will have taken Root, when they should be carefully taken up, and each put into a separate Pot, filled with light sandy Earth, but not dunged, and placed in the Shade till they have taken fresh Root; then they may be placed with other hardy exotic Plants in a sheltered Situation, to remain till the Frost begins, when they must be removed into the Green-house, placing them near the Windows that they may enjoy the free Air, for this Plant only requires Protection from Frost. The Earth in which these are planted, should be light, but very poor, for in rich Earth they grow too luxuriant, and seldom flower.

The 9th Sort was sent me from *La Vera Cruz*, by the late Dr. *Houstaun*, where he found it growing naturally in great Plenty. This sends out many herbaceous Stalks from the Root, which are hairy, and trail on the Ground. The Leaves are placed by Pairs opposite; these are long, narrow, and indented on their Edges in two or three Places opposite to each other, so as to appear like three, five, or seven Lobes: They are rough, and of a deep green on their upper Side, but hoary on their under, and are covered with slender Hairs. From the Divisions of the Branches and the Wings of the Leaves, come out long naked Foot Stalks, which are terminated by single yellow Flowers, about the Size of those of the Field Daisy; these are succeeded by long, flat, rough Seeds. This Plant

Plant is annual; the Seeds must be sown in Spring upon a hot Bed, and when the Plants are fit to remove, they should be planted in Pots filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, observing to shade them until they have taken new Root, then they must have Air admitted to them every Day, in Proportion to the Warmth of the Season, and treated as other tender Plants from the same Countries. This flowers in *August*, and the Seeds, ripen in *October*.

The 10th Sort rises with an upright Stalk, about 8 Inches high, sending out slender stiff Branches on every Side, those near the Ground being much longer than the upper; these are garnished with oblong hairy Leaves without Foot Stalks, placed opposite. From the Wings of the Stalk, arise the Foot Stalk of the Flower, having two small Leaves placed opposite, just below the Flower, which hath a single Empalement, like the other Species. The Flowers are of a yellowish white Colour. This Sort was sent me with the former from *La Vera Cruz*. It is an annual Plant, and requires the same Treatment as the former Sort.

CALF'S SNOOT. See *Antirrhinum*.

CALLA. *Lin. Gen. Plant.* 917. *Arum. Tourn. Inst.* R. H. 158. Wake Robin, or Ethiopian Arum.

The Characters are,

It hath a large open Spatha of one Leaf, which is oval and Heart-shaped ending in a Point, is coloured and permanent. It hath a single upright Spadix, to which the Flowers and Fruit adhere. This hath male and female Flowers, intermixed toward the upper Part of the Club (or Spadix). The male Flowers consist of many very short Stamina, terminated by small yellowish Summits; the female Flowers have a compressed Style, resting upon an obtuse Germen, crowned by a pointed Stigma. These Flowers at their first Appearance, have a short green Empalement, which soon falls off, leaving the Style naked. The Germen afterward becomes a globular pulpy Fruit, compressed on two Sides, inclosing two or three obtuse Seeds.

We have but one Sort of this Genus, which is cultivated in Gardens, viz.

CALLA foliis sagittato-cordatis, spathe cucullata, spadice superne masculo. *Hort. Cliff.* 436. Calla with Arrow-headed Heart-shaped Leaves, a hooded Sheath, and male Flowers situated on the upper Part of the Spadix. This is the *Arum Africanum flore albo odorato*. *Par. Bat. Prod. Africanum* with a white sweet Flower.

This Plant hath thick fleshy tuberous Roots, which are covered with a thin brown Skin, and strike down many strong fleshy Fibres into the Ground. The Leaves arise in Clusters, having Foot Stalks more than a Foot long, which are green and succulent. The Leaves are shaped like the Point of an Arrow, 8 or 9 Inches in Length, and of a shining green, ending in a sharp Point, which turns backward; between the Leaves arises the Foot Stalk of the Flower, which is thick, smooth, of the same Colour as the Leaves, rises above them, and is terminated by a single Flower, shaped like those of the *Arum*; the Hood or Spatha being twisted at the Bottom, but spreads open at the Top, and is of a pure white Colour. In the Center of this is situated the Spadix or Club, which is of an herbaceous yellow Colour, upon which the small herbaceous Flowers are placed, and so closely joined, as that the male and female

Parts are very difficult to distinguish, without the Assistance of Glasses. When these fade, Part of those which are situated at the Top of the Club, are succeeded by roundish fleshy Berries compressed on two Sides, each containing two or three Seeds.

This Plant grows naturally at the Cape of Good Hope, but has been long an Inhabitant in the English Gardens. It propagates very fast by Offsets, which should be taken off the latter End of *August*, at which Time the old Leaves decay; but this Plant is never destitute of Leaves, for before the old ones decay, there are young Leaves produced, which advance in Height all the Winter; but at this Season the Roots are in their most inactive State. These Roots have generally a great Number of Offsets about them, so that unless there is a want of them, the largest only should be chosen, which should be separated from all the smaller, and each planted in a separate Pot, filled with Kitchen Garden Earth, and placed with other hardy exotick Plants in the open Air till Autumn, when they must be removed into Shelter for the Winter Season, during which Time, they must not have too much wet, for that will rot the Roots. This Plant is so hardy as to live in the open Air in mild Winters, without any Cover, if they are planted in warm Borders, and have a dry Soil; but with a little Shelter in hard Frost, they may be preserved in the open Ground very well. It flowers in *May*, and the Seeds ripen in *August*, but as the Roots increase so plentifully, few Persons care to sow the Seeds, because the young Plants will not flower in less than three Years. The Flowers of this Plant have but little Sweetness, although by *Herman's* Title, it should have a very agreeable Odour, but unless a Person places it near him, it cannot be perceived. I have frequently received the Seeds of this from the Cape of Good Hope, but have always found they produced the same Sort.

CALLACARPA. See *Johnstonia*.

CALTHA. *Lin. Gen. Plant.* 623. *Populago, Tourn. Inst. Caltha palustris, Raij. Meth.* 78. Marsh Marigold.

The Characters are,

The Flower hath no Empalement, but is composed of five large oval Petals which spread open, and are concave. It hath a great Number of slender Stamina, which are shorter than the Petals, and terminated by obtuse erect Summits: In the Center there are several oblong compressed Germen, which have no Styles, but are crowned by single Stigma. The Germen afterward become so many short pointed Capsules, containing many roundish Seeds.

The Species are,

1. CALTHA foliis orbiculatis crenatis, flore majore. Marsh Marigold with round crenated Leaves, and a larger Flower. This is the *Populago flore majore*. *Tourn. Inst.* 273. *Populago* with a larger Flower.

2. CALTHA foliis orbiculato-cordatis crenatis flore minore. Marsh Marigold with round Heart-shaped Leaves which are crenated, and a smaller Flower.

These two Sorts are supposed to be the same, but I have never observed either of them to vary, either in their natural Places of Growth, or when they are removed into a Garden. They both grow upon moist boggy Land, in many Parts of *England*, but the first is the most common; of this there is a Variety, with very double Flowers, which for its Beauty is preserved

in Gardens. This is propagated by parting the Roots in Autumn, and should be planted in a moist Soil, and a shady Situation; as there are often such Places in Gardens, where few other Plants will thrive, so these may be allowed to have Room, and during their Season of flowering, will afford an agreeable Variety. The Sort with double Flowers, doth not appear so early in the Spring as the single, but continues much longer in Beauty. It flowers in May, and if the Season is not very warm, will continue till the Middle of June.

CALYX, The Cup inclosing the Flower; it is also styled the Empalement.

CAMARA. See Lantana.

CAMERARIA. *Plum. Nov. Gen. 18. Tab. 29. Lin. Gen. Plant. 264.*

This Plant was so named by Father Plumier, in Honour of Joacchim Camerarius, a Physician and Botanist of Nuremberg; who published an Edition of Mattbiolus, in Latin and High Dutch, with new Figures of the Plants, and many Observations.

The Characters are,

The Flower hath a short permanent Empalement of one Leaf cut into five acute Segments at the Top: The Flower is of one Leaf, Salver-shaped, having a long cylindrical Tube at Bottom, which is enlarged above, and divided at the Top into five acute Segments, which spread horizontally. It hath five short inflexed Stamina, terminated by obtuse membranaceous Summits. In the Bottom of the Tube are situated two roundish Germen, having one common Style, which is cylindrical, and the Length of the Stamina, crowned by two Stigma; the under one is orbicular and flat, the other is concave. The Germen becomes two long, taper, leafy Capsules, filled with oblong cylindrical Seeds.

The Species are,

1. CAMERARIA *foliis subrotundis, utrinque acutis. Hort. Cliff. 76. Lin. Sp. Plant. 210.* This is the Cameraria lato Myrti folio. *Plum. Nov. Gen. 18.* Cameraria with a broad Myrtle Leaf.

2. CAMERARIA *foliis linearibus. Lin. Sp. Plant. 210.* This is the Cameraria angustolinarie folio. *Plum. Nov. Gen. 18.* Cameraria with narrow Toad Flax Leaves.

The first Sort was sent me from the Havanna, where it grows naturally in great Plenty. This rises with a shrubby Stalk, to the Height of 10 or 12 Feet, dividing into several Branches, garnished with roundish pointed Leaves placed opposite, and many smooth transverse Veins running from the Midrib to the Borders. The Flowers are produced at the End of the Branches in loose Clusters; which have long Tubes enlarging gradually upward, and at the Top are cut into five Segments, broad at their Base, but end in sharp Points: The Flower is of a yellowish white Colour. After the Flowers are fallen, the Germen become two leafy Capsules joined at their Base, and have two swelling Protuberances on each side at the Bottom, the Middle being extended considerably longer; these have one Cell, filled with cylindrical Seeds. It flowers in August, but never produces any Seeds in England.

The 2d Sort hath an irregular shrubby Stalk, which rises about 8 Feet high, sending out irregular Branches, garnished with very narrow, thin Leaves placed opposite at each Joint; these have two Ribs running longitudinally through each. The Flowers are produced

scatteringly at the End of the Branches, and are shaped like those of the former, but smaller. Both these Plants abound with an acrid milky Juice like the Spurge. This Sort grows naturally in Jamaica.

These Plants are propagated by Seeds, which must be procured from the Places of their Growth. They may also be propagated by Cuttings planted in a hot Bed during the Summer Months: They must have a Bark Stove, for they are very tender Plants; but in warm Weather must have Plenty of Air.

CAMPANIFORM Flowers, such Flowers as in Shape resemble a Bell.

CAMPANULA, *Tourn. Inst. Lin. Gen. Plant. 201.* So called, because the Flowers resemble a little Bell.

The Characters are,

The Empalement is divided into five acute Parts, is upright, spreading, and rests upon the Germen. The Flower is of one Leaf shaped like a Bell, spreading at the Base where there are Holes. In the Bottom is situated the five cornered Nectarium, which is joined to the Top of the Receptacle. It hath five short Stamina, which are inserted in the Top of the Valves of the Nectarium, terminated by long compressed Summits: Below the Receptacle is situated the angular Germen, supporting a Style which is longer than the Stamina, and crowned by a thick, oblong, tripartite Stigma. The Empalement afterward becomes a roundish angular Capsule, which in some Species have three, and in others five Cells, each having a Hole toward the Top, through which the Seeds are scattered when ripe.

The Species are,

1. CAMPANULA *foliis ovatis glabris subserratis, caule erecto paniculato, ramulis brevibus.* Bell Flower with oval, smooth Leaves sawed below, an upright paniculated Stalk, and short Branches. *Campanula pyramidata altissima. Tourn. Inst. 109.* Tallest pyramidal Bell Flower.

2. CAMPANULA *foliis radicalibus obovatis, caulibus lanceolato-linearibus subserratis sessilibus remotis. Lin. Sp. Plant. 164.* Bell Flower with lower Leaves oval, and those on the Stalks narrow, Spear-shaped, and sawed, and growing close to the Stalks. This is the *Campanula persicaefolia. Clus. Hist. 171.* Peach leaved Bell Flower.

3. CAMPANULA *capsulis quinquelocularibus testis, calycis sinibus reflexis. Vir. Cliff. 16.* Bell Flower with a covered Capsule having five Cells, and the Borders of the Cup reflexed. This is the *Campanula bortenensis folio & flore oblongo. C. B. P.* Garden Bell Flower with an oblong Leaf and Flower, called Canterbury Bell Flower.

4. CAMPANULA *caule angulato, foliis petiolatis, calycibus ciliatis, pedunculis trifidis. Vir. Cliff. 16.* Bell Flower with an angular Stalk, Leaves having Petals, a hairy Empalement, and a trifid Foot Stalk. This is the *Campanula vulgarior, foliis urticae vel major & asperior. C. B. P. 94.* More common, or greater and rougher Bell Flower with Nettle Leaves.

5. CAMPANULA *foliis ovato-lanceolatis, caule simplicissimo tereti, floribus solitariis pedunculatis fructibus cernuis. Vir. Cliff. 17.* Bell Flower with oval Spear-shaped Leaves, a single taper Stalk, Flowers growing singly upon Foot Stalks, and pendent Fruit. This is the *Campanula maxima foliis latissimis. C. B. P. 94.* Greatest Bell Flower with broadest Leaves.

6. CAMPANULA *foliis undulatis radicalibus lanceolato-ovalibus, panicula coarctata. Hort. Upsal.* Bell Flower with

with waved Leaves; those growing near the Stalk oval and Spear-shaped, and a compressed Panicle. This is the *Campanula radice esculenta*. H. L. Bell Flower with an esculent Root, commonly called *Rampion*.

7. *CAMPANULA caule angulato simplici, floribus sessilibus capitulo terminali*. Vir. Cliff. 16. Bell Flower with a single angular Stalk, Flowers growing close, and terminating in a Head. This is the *Campanula pratensis flore conglomerato*. C. B. P. 94. Meadow Bell Flower with Flowers gathered in Bunches.

8. *CAMPANULA caule ramosissimo diffuso foliis oblongis subcrenatis, calycibus solitariis corollâ longioribus, capsulis prismaticis*. Hort. Upsal. 41. Bell Flower with a very branching diffused Stalk, oblong crenated Leaves, solitary Flower Cups longer than the Petal, and prismatic Capsules. *Campanula arvensis erecta Euphrasie lutea, seu Trifraginis appulæ foliis*, H. Cath. Upright Field Bell Flower with yellow Eye-bright Leaves.

9. *CAMPANULA caule ramoso foliis ovatis sessilibus, floribus pedunculatis terminatricibus*. This is the *Campanula arvensis erecta*. H. L. Upright Field Bell Flower.

10. *CAMPANULA caule basi subramoso stricco, foliis oblongis crenatis, calycibus aggregatis corollâ longioribus, capsulis prismaticis*. Lin. Sp. Plant. 168. This is the *Campanula arvensis minima erecta*. Mor. Hist. 2. 457. Least upright Field Bell Flower, or small Venus Looking Glass.

11. *CAMPANULA caule dichotomo, foliis sessilibus utrinque dentatis*. Hort. Cliff. 65. Bell Flower with a Stalk divided in two, and Leaves growing close to the Stalks, which are indented on both Sides. This is the *Campanula minor annua, foliis incis.* Mor. Hist. 1. 458. Smaller annual Bell Flower with cut Leaves.

12. *CAMPANULA caule subdiviso ramosissimo, foliis linearibus acuminatis*. Hort. Cliff. 66. Bell Flower with a very branching, divided Stalk, and very narrow pointed Leaves. This is the *Campanula pentagonia flore amplissimo Thracia*. Tourn. Inst. 112. Five cornered Bell Flower of *Thrace*, with a very large Flower.

13. *CAMPANULA caule simplici, foliis cordatis dentatis amplexicaulibus, floribus sessilibus aggregatis*. Hort. Upsal. 40. Bell Flower with a single Stalk, Heart-shaped indented Leaves which embrace the Stalk, and Flowers gathered together and growing close to the Stalk. This is the *Campanula pentagonia perfoliata*. Mor. Hist. 2. P. 457. Five cornered perfoliate Bell Flower.

14. *CAMPANULA caule ramoso, foliis linguiformibus crenulatis margine cartilagineo*. Prod. Leyd. 246. Bell Flower with a branching Stalk, Tongue-shaped crenulated Leaves with stiff Edges. This is the *Campanula minor Americana, foliis rigidis flore cæruleo patulo*. H. L. 107. Smaller American Bell Flower with stiff Leaves, and a blue spreading Flower.

15. *CAMPANULA foliis basatis dentatis oppositis petiolatis, capsulis quinquelocularibus*. Lin. Sp. Plant. 168. Bell Flower with Spear-shaped, indented Leaves growing opposite, and having Foot Stalks, and Capsules with five Cells. This is the *Campanula Canariensis atriplicis folio, tuberosâ radice*. Canary Bell Flower with an Orach Leaf, and a tuberous Root.

There are several other Species of this Genus, some of which grow naturally in England, and others in the northern Parts of Europe, which have but little Beau-

ty, therefore are seldom cultivated in Gardens. There are also several Varieties of some of the Sorts here mentioned, which I shall take Notice of in their proper Place; but as they are not distinct Species, I have omitted them in the above List.

The first Sort hath thick tuberous Roots which are milky; this sends out three or four strong, smooth, upright Stalks, which rise near four Feet high, garnished with smooth oblong Leaves, whose Edges are a little indented. The lower Leaves are much broader than those which adorn the Stalks. The Flowers are produced from the Side of the Stalks, and are regularly set on for more than Half the Length of the Stalks; forming a sort of Pyramid; these are large, open, and shaped like a Bell. The most common Colour of the Flowers is a light Blue; there have been some with white Flowers, but the latter is most esteemed.

This Plant is cultivated to adorn Halls, and to place before Chimnies in Summer, when in flower, for which Purpose there is no Plant more proper; for when the Roots are strong, they will send out four or five Stalks, which will rise as many Feet high, and are garnished with Flowers great Part of their Length. These upright Stalks send out some short Side Branches, which are also adorned with Flowers, so that by spreading the upright Stalks to a flat Frame composed of slender Sticks (as is usually practised) the whole Plant is formed into the Shape of a Fan, and will spread near the Width of a common Fire Place. When the Flowers begin to open, the Pots are removed into the Rooms, where, being shaded from the Sun, and kept from the Rain, the Flowers will continue long in Beauty, and if the Pots are every Night removed into a more airy Situation, but not exposed to heavy Rains, the Flowers will be fairer, and continue much longer in Beauty.

The Plants which are thus treated are seldom fit for the Purpose the following Season, therefore a Supply of young Plants should be annually raised. The common Method of propagating them, is by dividing the Root; the best Time for which is in September, that the Offsets may get strong Roots before Winter.

This Method of propagating by Offsets is the quickest, therefore generally practised, but the Plants which are raised from Seeds, are always stronger, and the Stalks will rise higher, and produce a greater Number of Flowers, therefore I recommend it to the Practice of the Curious; but in order to obtain good Seeds, there should be some strong plants placed in a warm Situation, near a Pale, or Wall, in Autumn; and, if the following Winter should prove severe, they should be covered either with Hand Glasses, or Mats, to prevent their being injured by Frost; in Summer when the Flowers are fully open, if the Season should prove very wet, the Flowers must be screened from great Rains, otherwise there will be no good Seeds produced, and the not observing this, has occasioned many to believe that the Plants do not bear Seeds in England, which is a great Mistake, for I have raised great Numbers of the Plants from Seeds of my own saving; but I have always found that the Plants which have been long propagated by Offsets, do seldom produce Seeds, and many other Plants which are propagated by Slips, or Cuttings, in a few Years become barren.

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When the Seeds are obtained, they must be sown in Autumn in Pots, or Boxes, filled with light undunged Earth, and placed in the open Air till the Frost, or hard Rains come on, when they should be placed under a hot Bed Frame, where they may be sheltered from both, but in mild Weather the Glasses should be drawn off every Day, that they may enjoy the free Air; with this Management the Plants will come up early in the Spring, and then they must be removed out of the Frame, placing them first in a warm Situation, but when the Season becomes warm, they should be removed where they may have the Morning Sun only. During the following Summer they must be kept clean from Weeds, and in very dry Weather, now and then, refreshed with Water, which must be given with great Caution, for the Roots are very subject to rot with Moisture. In September the Leaves of the Plants will begin to decay, at which Time they should be transplanted; therefore there must be one or two Beds prepared, in Proportion to the Number of Plants. These Beds must be in a warm Situation, and the Earth light, sandy, and without any Mixture of Dung, which last is an Enemy to this Plant. If the Situation of the Place is low, or the natural Soil moist, the Beds must be raised five or six Inches above the Surface of the Ground, and the natural Soil removed a Foot and a Half deep, putting Lime Rubbish, or Stones, eight or nine Inches thick in the Bottom of the Trench to drain off the Moisture. When the Beds are prepared, the Plants must be taken out of the Pots, or Cases, very carefully, so as not to break or bruise their Roots, for they are very tender, and, on being broken, the milky Juice will flow out plentifully, which will greatly weaken them. These should be planted at about four Inches Distance each Way, with the Head, or Crown of the Root, half an Inch below the Surface; if there happens a gentle Shower of Rain soon after they are planted, it will be of great Service to the Plants, but as the Season sometimes proves very dry at this Time of the Year, in that Case, it will be proper to give them a gentle Watering three or four Days after they are planted, and to cover the Beds with Mats every Day, to prevent the Sun from drying the Earth, but these must be taken off in the Evening, that the Dew may fall on the Ground. Towards the End of October the Beds should be covered over with some old Tanners Bark to keep out the Frost, and where there is not Convenience of covering them with Frames, they should be arched over with Hoops, that in severe Frosts they may be covered with Mats, for these Plants, when young, are often destroyed in Winter, where this Care is wanting. In Spring the Coverings must be removed, and the following Summer the Plants must be kept clean from Weeds; and, if the Season should prove very dry, they must now and then be refreshed with Water. The following Autumn the Surface of the Ground should be stirred between the Plants, and some fresh Earth spread over the Beds, and in Winter covered as before. In these Beds the Plants may remain two Years, during which Time they must be treated in the Manner before directed, by which Time the Roots will be strong enough to flower, so in September they should be carefully taken up, and some of the most promising, plant-

ed in Pots; the others may be planted into warm Borders, or in a fresh Bed, at a greater Distance than before, to allow them Room to grow. These Plants which are potted should be sheltered in Winter from great Rains and hard Frosts, otherwise they will be in Danger of rotting, or at least will be so weakened, as not to flower with any Strength the following Summer; and those which are planted in the full Ground, should have some old Tanners Bark laid round them, to prevent the Frost from entering deep to the Roots; with this Management these Plants may be brought to the utmost Perfection, and a constant Succession of good Roots raised, which will be much preferable to those which are propagated by Offsets. I have been informed there is a double Flower of this Kind, but have never seen it. This Sort is by some called Steeple Bell Flower.

The 2d Sort grows naturally in the northern Parts of Europe, but has been long cultivated in the English Gardens; of this there are the single, blue, and white Flower, which have been long here; and the double Flower of both Colours, which have not been more than twenty Years in England, but have been propagated in such Plenty, as to have almost banished those with single Flowers from the Gardens. These are easily propagated by parting their Roots in Autumn, every Head which is then slipped off will take Root; they are extreme hardy, so will thrive in any Soil or Situation, therefore are very proper Furniture for the common Borders of the Flower Garden.

This hath a Root composed of many Fibres, and sends up an angular, or channeled stiff Stalk, about two Feet and a Half high, which is garnished with oblong, oval, stiff Leaves near the Root, which come without Order, but those on the Stalks are longer and narrower, having their Edges slightly indented, and are of a shining green. The Flowers are produced towards the upper Part of the Stalk, upon short Foot Stalks. These are shaped like those of the former Sort, but are smaller, and more expanded. This Sort flowers in June and July, and in cool Seasons there will be some great Part of August.

The 3d Sort is a biennial Plant, which perishes soon after it hath ripened Seeds. It grows naturally in the Woods of Italy and Austria, but is cultivated in the English Gardens for the Beauty of its Flowers, of this Sort there are the following Varieties, the blue, the purple, the white, the striped, and double flowering, but the two last are not very common in England.

This hath oblong, rough, hairy Leaves, which are serrated on their Edges, coming out without Order from the Root, from the Center of these a stiff, hairy, furrowed Stalk, arises about two Feet high, sending out several lateral Branches, from the Bottom upward, garnished with long, narrow, hairy Leaves, sowed on their Edges, and placed alternately; from the setting on of these Leaves, come out the Foot Stalks of the Flower; those which are on the lower Part of the Stalk and Branches, being four or five Inches long, diminishing gradually in their Length upward, and thereby form a Sort of Pyramid. The Flowers of this Kind are very large, so make a fine Appearance; these come out the Beginning of June, and, if the Season is not very hot,

will continue a Month in Beauty. The Seeds ripen in *September*, and the Plants decay soon after.

It is propagated by Seeds, which must be sown in Spring, on an open Bed of common Earth, and when the Plants are fit to remove, they should be transplanted into the Flower Nursery, in Beds six Inches asunder, observing to water them frequently till they have taken new Root, after which they will require no other Culture, but to keep them clean from Weeds till the following Autumn, when they should be transplanted into the Borders of the Flower Garden. As these Plants decay the second Year, there should be annually young ones raised to succeed them; but if you permit the Seeds to fall, the Plants will rise in plenty and require no Care but to transplant them.

The 4th Sort hath a perennial Root, which sends up several stiff hairy Stalks, having two Ribs, or Angles. These put out a few short Side Branches, garnished with oblong pointed hairy Leaves, deeply sawed on their Edges. Toward the upper Part of the Stalks, the Flowers come out alternately, upon short trifid Foot Stalks, having hairy Empalements. The Flowers are shaped as the former, but shorter, spread more at the Brim, and are pretty deeply cut into many acute Segments. This flowers in *June*, and the Seeds ripen in Autumn.

The Varieties of this are, the deep and pale blue; the white with single Flowers, and the same Colours with double Flowers. The double Sorts are propagated by parting their Roots in Autumn, which should be annually performed, otherwise the Flowers are apt to degenerate to single; the Soil should not be too light, or rich, in which they are planted, for in either of these they will degenerate; but in a strong fresh Loam, their Flowers will be in the greatest Perfection. The Plants are extreme hardy, so may be planted in any Situation; those with single Flowers do not merit a Place in Gardens.

The 5th Sort grows naturally in the northern Parts of *England*; this hath a perennial Root, composed of many fleshy Fibres, which abound with a milky Juice, from which arise several strong, round, single Stalks, which never put out Branches, but are garnished with oval Spear-shaped Leaves, slightly indented on their Edges, which are placed alternately. Toward the upper Part of the Stalk, the Flowers come out singly upon short Foot Stalks; these spread open at the Brim, where they are deeply cut into five acute Segments; after the Flowers are past, the Empalement becomes a five cornered Seed Vessel, which turns downward till the Seeds are ripe, when it rises upward again.

The Varieties of this are the blue, purple, and white flowering. This Sort is easily propagated by Seeds, which if suffered to scatter, the Plants will come up in great Plenty the following Spring, when they may be transplanted into the Nursery till Autumn, at which Time they should be transplanted where they are designed to remain. As this Sort delights in Shade, the Plants may be placed under Trees, or in shady Borders where few better Things will thrive, and the Flowers afford an agreeable Variety. It flowers in *June* and *July*, and the Seeds ripen in Autumn.

The 6th Sort hath roundish fleshy Roots, which are much cultivated in *France* for Sallets, and some Years past it was cultivated in the *English* Gardens, but is now

generally neglected. It grows naturally in several Parts of *England*, but those Roots never grow to half the Size of those which are cultivated. This is propagated by Seeds, which should be sown in a shady Border the latter End of *May*, and when the Plants are about an Inch high, the Ground should be hoed, as is practised for Onions, to cut up the Weeds, and thin the Plants to the Distance of 3 or 4 Inches; and when the Weeds come up again, they must be hoed over to destroy them; this, if well performed in dry Weather, will make the Ground clean for a considerable Time, so that being three Times repeated, it will keep the Plants clean till Winter, which is the Season for eating the Roots, when they may be taken up for Use as they are wanted. These will continue good till *April*, at which Time they send out their Stalks, when they will become hard and unfit for use, as do also those Roots which have flowered, so that the young Roots only are fit for the Table; therefore when the Seeds are sown too early, the Plants frequently run up to flower the same Year, which spoils their Roots.

This Sort sends out upright Stalks about two Feet high, which are garnished with oblong Spear-shaped Leaves, placed alternately. Towards the upper Part of the Stalk the small Bell Flowers are produced, standing upright, close to the Stalk; some of these Flowers are blue, and others are white; they come out in *June* and *July*, and the Seeds ripen in Autumn.

The 7th Sort grows naturally upon chalky Pastures in many Parts of *England*, where the Stalks rise near a Foot high, but in other Places it grows to double that Height, which has occasioned their being taken for two distinct Plants. This hath a perennial Root, which sends up several round hairy Stalks, which often rise upward of two Feet high; the Bottom Leaves are broad, and stand upon long Foot Stalks; these are slightly sawed on their Edges. Those which are upon the Stalks are long, narrow, have no Foot Stalks, and are placed alternately at considerable Distances. From the Wings of the Leaves, towards the upper Part of the Stalk, come out long naked Foot Stalks, supporting two or three Bell-shaped Flowers, closely joined together in a Head, and the main Stalk is terminated by a large Cluster of the same Flowers, which are succeeded by roundish Capsules filled with small Seeds. This Plant is easily propagated by Seeds, or parting the Roots, and will thrive in any Soil or Situation. It flowers in *July*, and the Seeds ripen in Autumn.

The 8th Sort is an annual Plant which rises with slender Stalks a Foot high, branching out on every Side, which are garnished with oblong Leaves, a little curled on their Edges; from the Wings of the Leaves come out the Flowers, sitting close to the Stalks, which are of a beautiful purple, inclining to a violet Colour, divided into five Segments, which resemble so many Leaves, and in the Evening contract and fold into a pentagonal Figure, from whence it is by some titled *Viola Pentagonia*, or five cornered Violet. The Empalement which encompasses the Flower, is composed of five long, narrow, green Leaves, which spread open, and are much longer than the Petals of the Flower; these remain on the Top of the prismatic Seed Vessel, which is filled with small angular Seeds. If this Plant is sown in Autumn, it will

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grow much taller, and flower a Month earlier than when sown in Spring. The autumnal Plants will flower in May, and the Spring Plants in June and July. There is a Variety of this with white Flowers, and another with pale purple.

The 9th Sort is the common *Venus Looking Glas*, which hath been long cultivated in the *English* Gardens. This seldom rises more than six Inches high, with a Stalk branching from the Bottom upward, and garnished with oval Leaves, fitting close to the Stalks, from the Base of which the Branches are produced, which are terminated by Flowers, very like those of the former Sort.

The 10th Sort grows naturally in *England*, in arable Land; this sends out an upright Stalk, about 6 or 7 Inches high, and near the Root there are a few lateral Branches, which are weak, and spread out on every Side. These are garnished with oval obtuse Leaves, slightly indented on their Edges, and placed alternately. At the Extremity of the Branches the Flowers are produced in small Clusters, which are small, but of the same Shape with the former, having a five leaved Empalement, much longer than the Petal, the Seed Vessel is shaped like the two former, but smaller.

The 11th Sort grows naturally in the South of *France* and *Italy*. This is a low annual Plant, which seldom rises six Inches high, but divides into many Branches, garnished with short oval Leaves, fitting close to the Branches, and deeply indented on both Sides. The Flowers are produced at the Ends of the Branches, they are shaped like those of the other three Sorts last mentioned, but small, their Colour less beautiful, and the Leaves of the Empalement are broader.

The 12th Sort grows naturally in *Thrace*, but hath been long in the *English* Gardens. This is a low annual Plant, which rises little more than six Inches high; the Stalks divide by Pairs, and frequently there arises a Branch from the Middle of the Divisions; the lower Leaves are oblong and obtuse, but those toward the End of the Branches are much narrower, and pointed. The Flowers come out single at the End of the Branches, having a long five-leaved Empalement, and are larger than those of the three last Sorts, and of a fine blue Colour; the Seeds are like those of the eighth Sort.

The 9th Sort is the old *Venus Looking Glas*, which was formerly cultivated in Gardens, but the 8th Sort has almost supplanted it, being a much taller Plant, and the Flowers are larger, but their Colour is less beautiful, however it produces a greater Quantity of Seeds, so is to be had in Plenty, and there are few Persons, who are curious enough to distinguish them.

This was formerly sown in Gardens for Edgings to Borders, as were several other low annual Flowers, for which Purpose they were very improper, because the Design of these Edgings are to keep up the Earth of the Border, and prevent its washing down upon the Gravel in the Walks; but these Plants make very slender Roots, and often there are Gaps where the Seeds have not succeeded, whereby the Edgings are broken, which renders them unsightly; add to this the Shortness of their Duration, which is not more than six Weeks, from the Plants making a tolerable Verdure, to their Seeds being formed, when their Beauty decays, so that

these Plants are by no Means adapted to this Purpose; therefore the Seeds should be sown in small Patches, between taller flowering Plants where they are to remain, and the only Culture they require is to keep them clean from Weeds. If these, and the *Venus Navelwort*, Dwarf *Lycnris*, Candy Tuft, and other low annual Flowers, are properly mixed in the Borders of the Flower Garden, and sown at two or three different Seasons, to have a Succession of them in flower, they will afford an agreeable Variety. If these Seeds are sown in Autumn, the Plants will flower early in May, but those sown in Spring, will not flower till the Middle of June, and if a third sowing is performed about the Middle of May, the Plants will flower in August, but from the last Sowing, good Seeds must not be expected.

The 13th Sort is an annual Plant, which in good Ground will rise a Foot and a Half, but in poor Land, or where it grows wild among Corn, scarcely rises six Inches. The Stalk is single, rarely putting out any Branches, unless near the Root, from whence there are sometimes one or two short lateral Branches produced. The Leaves are roundish, and embrace the Stalk at their Base, their Edges are sharply sawed, and from their Base comes out a close Tuft of Flowers, surrounded by the Leaf, as in an Empalement. The Flowers are five cornered, shaped like those of the *Venus Looking Glas*, but much smaller; these are produced the whole Length of the Stalk. The Seeds are inclosed in short Capsules, shaped like those of the former Sorts. It grows in *Italy*, and also in *Virginia*. If the Seeds of this Sort are permitted to scatter, the Plants will come up without Care, or the Seeds may be sown in Spring, in the same Manner as those of the last Sorts, and treated the same Way.

The 14th Sort is a Native of *America*, but has been long cultivated in the Gardens of the Curious, both in *England* and *Holland*. This hath many rigid oblong Leaves coming out from the Root on every Side, which form a Sort of Head like those of House-leek, and are crenated, having a strong Rib running on their Border longitudinally. From the Center of the Plant proceeds the Stalk, which rises about a Foot high, and is thinly garnished with very narrow stiff Leaves, of a shining green. From the Wings of the Leaves, come out the Foot Stalks of the Flower, which are from two to four Inches long, each being terminated by one spreading Bell-shaped Flower, whose Empalement is short, and cut into five acute Segments. The Style of this is longer than the Petal, and is crowned by a bifid Stigma. There is a white and a blue Flower of this Sort, but in *Holland* they have it with a double Flower. This doth not produce Seeds in *England*, so is only propagated by Offsets; these may be taken off from the old Plants in August, that they may get good Root before the cold Weather begins; they must be planted in small Pots, filled with fresh, light, loamy Earth, and placed in the Shade until they have taken Root, then they may be placed with other hardy exoticks, and in Autumn removed into Shelter, for they will not live abroad. It flowers in July and August.

The 15th Sort is a Native of the *Canary Islands*, from whence it was introduced to the Gardens in *Europe*, where it hath been many Years cultivated, and of late
Years.

Years great Numbers of the Plants have been raised from Seeds, which were brought from thence, but the Flowers of these new raised Plants are not so well coloured as those of the old ones.

This hath a thick fleshy Root, of an irregular Form, sometimes running downward like a Parsnep, at other Times dividing into several Knobs near the Top, and when any Part of the Root is broken, there issues out a milky Juice at the Wound. There are many strong fleshy Fibres sent out, which strike deep into the Ground, and from these a numerous Quantity of small ones. From the Head, or Crown of the Root, arises one, two, three, or more Stalks, in Proportion to the Size of the Root; but that in the Center is generally larger, and rises higher than the others. These Stalks are very tender, round, and of a pale green; their Joints are far distant from each other, and when the Roots are strong, the Stalks will rise ten Feet high, sending out several smaller Side Branches. At each Joint they are garnished with two, three, or four Spear-shaped Leaves, with a sharp pointed Beard on each Side. These are of a Sea-green, and, when they first come out, are covered slightly with an Ash-coloured Pounce. From the Joints of the Stalk the Flowers are produced, which are of the perfect Bell-shape, and hang downward; they are of a Flame Colour, marked with stripes of a brownish red; the Flower is divided into five Parts, at the Bottom of each is situated a Nectarium, covered with a white transparent Skin, much resembling those of the Crown Imperial, but are smaller; upon each of these is situated a Stamen, which rises almost the Length of the Petal, and is terminated by oblong Summits. In the Center of the Flower is situated the Style, which is longer than the Stamina, and is crowned by a trifid Stigma, which is reflexed. The Flowers begin to open in the Beginning of *October*, and there is often a Succession of them till *March*. The Stalks decay to the Root in *June*, and new ones spring up in *August*.

It is propagated by parting the Roots, which must be done with Caution, for if they are broken or wounded, the milky Juice will flow out plentifully, so that if these are planted before the Wounds are skinned over, it occasions their rotting; therefore when any of them are broken, they should be laid in the Green-house a few Days to heal. These Roots must not be too often parted, if they are expected to flower well; for by frequent parting, the Roots are weakened. The best Time for transplanting and parting their Roots, is in *July*, soon after the Stalks are decayed. The Earth in which these should be planted, must not be rich, for that will cause them to be luxuriant in Branches, and but thinly garnished with Flowers. The Soil in which they have succeeded best, is a light sandy Loam, mixed with a fourth Part of screened Lime Rubbish; when the Roots are first planted, the Pots should be placed in the Shade; and, unless the Season is very dry, should not be watered, for during the Time they are inactive, Wet is very injurious to them. About the Middle of *August* the Roots will begin to put out Fibres, at which Time, if the Pots are placed under a hot Bed Frame, and as the Nights grows cool, covered with the Glasses, but opened every Day to enjoy the free Air, it will greatly forward them for flowering, and increase their Strength;

when the Stalks appear, the Plants must be now and then refreshed with Water, but not too often, nor in great Quantity. The Plants thus managed, by the Middle of *September*, will have grown so tall, as not to be kept longer under the Frame, so they should be removed into a dry airy Glass Case, where they may enjoy the free Air in mild Weather, but screened from Cold. During the Winter Season, they must be frequently refreshed with Water, and guarded from Frost; and in Spring, when the Stalks begin to decay, the Pots should be set abroad in the Shade, and not watered.

CAMPBORA. See Laurus.

CAMPION. See Lychnis.

CANDLE-BERRY-TREE. See Myrica.

CANDY-TUFT. See Iberis.

CANNA. Lin. Gen. Plant. 1. *Cannacorus*. Tourn. Inst. R. H. 367. Tab. 192. Indian flowering Reed, and by some, Indian Cane. In French *Balifier*.

The Characters are,

The Flower hath a three leaved Empalement, which is permanent, erect, and coloured. It hath one Petal, divided into six Parts: The three upper Segments are erect, and broader than the lower, which are longer, two of which are erect, and the other turns back and is twisted. It hath one Spear-shaped Stamina rising as high as the Petal, having the Appearance of a Segment, which hath a slender Summit sitting upon its Border. Below the Empalement is situated a roundish, rough Germen, supporting a flat Style, with a slender Stigma fastened to its Border. The Germen becomes an oblong, roundish, membranaceous Capsule, having three longitudinal Furrows, crowned by the Empalement, which hath three Cells filled with round smooth Seeds.

The Species are,

1. *CANNA foliis ovatis utrinque acuminatis nervosis*. Prod. Leyd. *Canna* with oval nervous Leaves pointed at both Ends. This is the *Cannacorus latifolius vulgaris*. Tourn. Common broad leaved flowering Cane.

2. *CANNA foliis oblongo-ovatis, acuminatis, segmentis florum angustioribus*. *Canna* with oblong, oval, pointed Leaves, and the Segments of the Flower narrow. *Cannacorus amplissimo folio flore rutilo*. Tourn. Inst. Indian flowering Cane with a large Leaf, and redish Flower.

3. *CANNA foliis ovatis obtusis nervosis, spicis florum longioribus*. *Canna* with oval obtuse nervous Leaves, and longer Spikes of Flowers. This is the *Cannacorus flore Coccineo splendente*. Tourn. Inst. 367. Indian flowering Cane, with a shining scarlet Flower.

4. *CANNA foliis ovatis petiolatis nervosis spatia florum longiore*. *Canna* with oval, obtuse, nervous Leaves, having Foot Stalks, and a longer Hood to the Flower. This is the *Cannacorus flore luteo punctato*. Tourn. Inst. R. H. 367. Indian Reed with a yellow spotted Flower.

5. *CANNA foliis lanceolatis petiolatis, emarginatis*. Prod. Leyd. 11. *Canna* with Spear-shaped, smooth Leaves having Foot Stalks. This is the *Cannacorus glaucophyllus, ampliore flore, Iridis palustris facie*. Hort. Eth. 69. Indian Cane with glaucous Leaves, a very large Flower, and the Appearance of the Marsh Iris.

The 1st Sort grows naturally in both Indies: The Inhabitants of the British Islands, call it Indian Shot; from the Roundness and Hardness of the Seeds.

This Plant hath a thick, fleshy, tuberous Root, which divides into many irregular Knobs, spreading wide near the

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the Surface of the Ground, and sends out many large oval Leaves without any Order; these, at their first Appearance, are twisted like a Horn, but afterwards expand and are near a Foot long, and five Inches broad in the Middle, lessening gradually to both Ends, and terminated in a Point. They have many large transverse Veins running from the Midrib to the Sides, which are prominent on their under Side; and between each of these, run two smaller, parallel, pointed Veins, which are peculiar to this Species. The Stalks are herbaceous, rising four Feet high, and are encompassed by the broad leafy Foot Stalks of the Leaves; these are compressed on two Sides; at the upper Part of the Stalk, the Flowers are produced in loose Spikes, each being at first covered by a leafy Hood, which afterward stands below the Flower, and turns to a brown Colour. Each Flower hath one Petal, which is cut almost to the Bottom into six slender Segments, the three upper being broadest; these are of a bright Scarlet, but the under have a Mixture of a paler Colour. The Flower is encompassed by a three leaved Empalement, which sits upon a small, roundish, rough Germen, which, after the Flower is fallen, swells to a large Fruit or Capsule oblong and rough, having three longitudinal Furrows, and is crowned by the three leaved Empalement of the Flower which remains. When the Fruit is ripe, the Capsule opens lengthways into three Cells, which are filled with round, hard, black, shining Seeds. The principal Season of these Plants flowering, is in *June* and *July*, but when they are placed in a proper Temperature of Heat, they always flower again in Winter and Spring.

As this is a Native of the warmest Parts of *America*, it requires a moderate Stove in Winter, otherwise the Roots will decay. I have frequently tried to keep it through the Winter in a Green-house, but could not succeed; for although some have escaped, yet they were so much weakened by the Cold, as not to recover Strength the following Summer, to flower in any tolerable Degree of Perfection; so that I have since constantly kept them in Winter in a moderate Stove, where they always flower in that Season, at which Time they make a fine Appearance; and in Summer, place them abroad in a sheltered Situation with other tender exotics, where they flower again, and produce ripe Seeds annually.

The 2d Sort grows naturally in *Carolina*, and some of the other northern Provinces of *America*. The Leaves of this are longer than those of the former, and terminate in sharper Points. The Stalks grow taller, and the Segments of the Flower are much narrower; the Colour is a pale red, so it makes no great Appearance. The Seeds are like those of the former. If the Roots of this are planted in warm Borders, and a dry Soil; they will live through the Winter in the open Air. I have Plants of this Sort in the *Chelsea* Garden, which have survived twelve Winters in a South-West Border, without Cover, and flower well every Year.

The 3d Sort hath larger Leaves than either of the former, and the Stalks rise much taller. I have received the Seeds from *America*, by the Title of *Wild Plantain*, and also from the *Brazils*. The Flower Stalks rise more than six Feet high. The Leaves are very large, those near the Root have long Foot Stalks. The Flowers are produced in larger Spikes than those of the former Sorts, and of a much brighter Scarlet. The Seed

Vessels are longer, and the Seeds larger; these Differences are permanent from Seeds, so that I make no doubt of its being a distinct Species.

The 4th Sort is less common in *America*. I received the Seeds of this from *India*, but have had two Varieties arise from the Seeds, one with a plain yellow, and the other a spotted Flower, which I find are apt to change from one to the other, when propagated by Seeds. This hath shorter and rounder Leaves than either of the former Sorts. The Stalks seldom rise higher than three Feet, and the Spikes of Flowers are like those of the 1st, excepting the Colour of the Flowers.

The Seeds of the 5th Sort I received from *Caribagena* in *New Spain*, in 1733, which produced very strong Plants the first Year, some of which flowered the same Autumn. The Roots are much larger than either of the former Sorts, and strike down strong fleshy Fibres deep in the Ground. The Stalks rise seven or eight Feet high. The Leaves are near two Feet long, narrow, smooth, and of a Sea-green Colour. The Flowers are produced in short, thick Spikes at the Extremity; they are large, and of a pale yellow Colour; the Segments of the Petal are broad, but their Shape like those of the other Sorts. The Seed Vessels are larger, and much longer than those of the other Sorts, but contain fewer Seeds, which are very large. Young Plants raised from Seeds of this Sort, do more certainly flower than old Roots, or Offsets taken from them; for the Roots send out many Offsets, which will spread to a considerable Distance where they have Room, but seldom produce Flowers, so that it is the best Way to raise a Succession of Plants from Seeds, and throw out the old ones when their Seeds are ripe.

All the Sorts are propagated by Seeds, which should be sown on a hot Bed in the Spring, and when the Plants are fit to remove, they should be transplanted into separate small Pots, filled with rich Kitchen Garden Earth, and plunged into a moderate hot Bed of Tanners Bark, observing to shade them till they have taken Root; after which, they should have a large Share of free Air admitted to them every Day, in warm Weather, and be frequently refreshed with Water. As these Plants will make great Progress in their Growth, they must be shifted into larger Pots filled with the same Sort of Earth, and Part of them plunged into the hot Bed again, and the others may be placed abroad in *June*, with other exotick Plants, in a warm Situation. Those which are placed in the hot Bed, will be strong enough to flower well in the Stove, the following Winter; but those in the open Air, will not flower before the following Summer: These may remain abroad till the Beginning of *October*, when they must be removed into the Stove, and treated in the same Manner as the old Plants; and in *May*, if a gentle hot Bed is made, and covered a Foot thick with rich Earth, and the Plants turned out of the Pots, planting them with their Balls of Earth upon the hot Bed, covering each with a Bell Glass, which may be raised on one Side every Day, to admit Air to the Plants; and as these advance, they must be gradually inured to bear the open Air. With this Management, the Plants will grow much taller, and flower stronger than those which are kept in Pots, and from these, good Seeds may be expected in Autumn.

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The 2d Sort which is much hardier than either of the other, should have a different Treatment. The young Plant of this, must be earlier inured to the open Air, where they may remain till the Frost begins, then they must be placed in the Green-house, and should have but little wet in Winter; and the Beginning of May, these should be turned out of the Pots, and planted in a warm South Border, in a dry Soil, where they will thrive and produce Flowers annually; but as there is little Beauty in this Sort, so a few Plants for Variety, will be sufficient. There is a Variety of this with variegated Leaves, which is preserved in some Gardens, and is propagated by parting the Roots; but this hath little Beauty, so is scarce worth cultivating.

CANNABINA. See *Datisca*.

CANNABIS *Lin. Gen. Plant.* 988. Hemp.

The Characters are,

It is male and female in different Plants. The male Flowers have a five leaved Empalement which is concave, but have no Petals; they have five short hairy Stamina, terminated by oblong, square Summits. The female have permanent Empalements of one Leaf, oblong and pointed. They have no Petals but a small Germen supporting two long Styles, crowned by acute Stigma; the small Germen becomes a globular depressed Seed, inclosed in the Empalement.

We have but one Species of this Plant, viz.

CANNABIS. *Lin. Sp. Plant.* 1027. Hemp. This is the *Cannabis sativa*. *C. B. P.* 320. Manured Hemp.

This Plant is propagated in the rich fenny Parts of *Lincolnshire*, in great Quantities, for its Bark, which is useful for Cordage, Cloth, &c. and the Seeds afford an Oil, which is used in Medicine.

Hemp is always sown on a deep moist rich Soil, such as is found in *Holland*, in *Lincolnshire*, and the Fens in the Isle of *Ely*, where it is cultivated to great Advantage, as it might in many other Parts of *England*, where there is the like Soil; but it will not thrive on Clay, or stiff cold Land: it will greatly impoverish the Land, so that this Crop must not be repeated on the same Ground.

The Land on which Hemp is designed to be sown, should be well ploughed, and made very fine by Harrowing; about the Middle of *April* is a good Season for sowing the Seed: Three Bushels is the usual Allowance for an Acre, but two is fully sufficient: In the Choice of the Seed, the heaviest and brightest-coloured should be preferred, and Care should be had to the Kernel of the Seed, so that some of them should be cracked to see if they have the Germ or future Plant perfect; for in some Places the male Plants are drawn out too soon from the female; *i. e.* before they have impregnated the female Plants with the *Farina*; in which Case, though the Seeds produced by these female Plants may seem fair to the Eye, yet they will not grow, as is well known to the Inhabitants of *Bickar*, *Swineshead*, and *Dunnington*, three Parishes in the Fens of *Lincolnshire*, where Hemp is cultivated in great Abundance, who have dearly bought their Experience.

When the Plants are come up, they should be hoed out as is practised for Turneps, leaving the Plants a Foot or 16 Inches apart; observe also to cut down all the Weeds, which if done in dry Weather, will destroy them. This Crop will require a second Hoeing about a

Month or six Weeks after the first, in order to destroy the Weeds: If this be well performed, it will require no farther Care; for the Hemp will soon after cover the Ground, and prevent the Growth of Weeds.

The first Season for pulling the Hemp is about the Middle of *August*, when they begin to pull what they call the Fimble Hemp, which is the male Plants; but it would be much better to defer this a Fortnight or three Weeks longer, until these male Plants have fully shed their Dust, without which, the Seeds will prove abortive, produce nothing if sown the next Year, nor will those concerned in the Oil Mills give any Thing for them, there being only empty Husks, without any Kernels to produce the Oil. These male Plants decay soon after they have shed their *Farina*.

The 2d Pulling is a little after *Michaelmas*, when the Seeds are ripe: This is usually called *Karle Hemp*, it is the female Plants, which were left at the Time when the male were pulled. This *Karle Hemp* is bound in Bundles of a Yard Compass, according to Statute Measure, which are laid in the Sun for a few Days to dry; and then it is stacked up, or housed to keep it dry, till the Seed can be threshed out. An Acre of Hemp on a rich Soil, will produce near three Quarters of Seed, which, together with the unwrought Hemp, is worth from six to eight Pounds.

Of late the Inhabitants of the *British Colonies* in *North America*, have cultivated this useful Plant, and a Bounty was granted by Parliament for Hemp imported from thence; but whether the Inhabitants of those Colonies grew tired of cultivating it, or the Bounty was not regularly paid, I cannot say; whatever has been the Cause, the Quantity imported, has by no means answered the Expectation of the Public, which is greatly to be lamented; because, as this Commodity is so essential to the Marine, the being furnished with it from our own Plantations, will not only save the ready Money paid for it, but secure to the Country an ample Supply at all Times, without being obliged to our Neighbours for it.

CANNACORUS. See *Canna*.

CAPERS. See *Capparis*.

CAPILLARY Plants, are such Plants as have no main Stem, but their Leaves arise from the Root upon Pedicles, and produce their Seeds on the Back of their Leaves, as the Fern, Maiden Hair, &c.

CAPITULUM; *i. e.* a little Head; the Head or Top of any flowering Plant.

CAPNOIDES. See *Fumaria*.

CAPNORCHIS. See *Fumaria*.

CAPPARIS *Lin. Gen. Plant.* 567. *Tourn. Inst. R. H.* 261. *Caper*, in *French Caprier*. The *Caper Bush*.

The Characters are,

The Empalement is composed of three oval concave Leaves; the Flower hath four roundish Petals, indented at the Top, and spread open; it hath a great Number of slender Stamina, as long as the Petals, terminated by single Summits; in the midst of these arise a single Style, longer than the Stamina, with an oval Germen crowned by a short obtuse Stigma. The Germen becomes a fleshy turbinate Capsule, with one Cell filled with kidney-shaped Seeds.

The Species are,

1. *CAPPARIS spinosa, fructu minore, folio rotundo.* *C. B.*

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C. B. P. 480. Prickly Caper with a smaller Fruit, and a round Leaf.

2. *CAPPARIS inermis foliis ovatis perennantibus*. Smooth Caper with oval Leaves, which remain all the Year. This is the *Capparis non spinosa, fructu majore*. C. B. P. 480. Smooth Caper with a larger Fruit.

3. *CAPPARIS inermis foliis ovato-oblongis determinate confertis perennantibus*. Hort. Cliff. 204. Smooth Caper with oval oblong Leaves, growing in Clusters, which continue through the Year. This is the *Capparis arborescens Indica Baducca dicta*. Raii Hist. 1630. Indian Tree Caper, called *Baducca*.

4. *CAPPARIS foliis lanceolato-ovatis perennantibus caule arborescenti*. Caper with oval Spear-shaped Leaves, which continue all the Year, and a Tree-like Stalk.

5. *CAPPARIS foliis lanceolatis venosis perennantibus, floribus racemosis*. Caper with Spear-shaped veined perennial Leaves and Flowers growing in Bunches. This is the *Capparis arborescens Lauri foliis fructu longissimo*. Plum. Cat. 7. Tree Caper with Bay Leaves, and the longest Fruit.

6. *CAPPARIS foliis ovatis oppositis perennantibus floribus racemosis*. Caper with oval Leaves, placed opposite, which are perennial, and Flowers growing in Bunches.

7. *CAPPARIS foliis oblongo-ovatis alternis sessilibus perennantibus, floribus solitariis axillaribus*. Caper with oblong oval Leaves, placed alternate close to the Stalks, and Flowers growing singly from the Sides of the Branches.

8. *CAPPARIS foliis lanceolatis acutis confertis perennantibus, caule fruticoso*. Caper with pointed Spear-shaped perennial Leaves, growing in Clusters, and a shrubby Stalk.

9. *CAPPARIS foliis lanceolatis alternis, petiolis longissimis floribus confertis*. Caper with Spear-shaped Leaves placed alternate, on very long Foot Stalks, and Flowers growing in Clusters. This is the *Capparis alia arborescens Lauri foliis fructu oblongo ovato*. Plum. Cat. 7. Tree Caper with Bay Leaves, and oblong oval Fruit.

10. *CAPPARIS foliis lanceolatis nervosis perennantibus, pedunculis trifloris*. Caper with nervous Spear-shaped perennial Leaves, and three Flowers upon each Foot Stalk.

The 1st is the common Caper, whose full grown Flower Bud is pickled, and imported annually from *Italy*, and the *Mediterranean*. This is a low Shurb, which grows out of the Joints of old Walls, the Fissures of Rocks, and among Rubbish, in most of the warm Parts of *Europe*: This hath woody Stalks covered with a white Bark, which sends out many lateral slender Branches; under each of these are placed two short crooked Spines, between which and the Branches come out the Foot Stalk of the Leaves, which are single, short, and sustain a round smooth entire Leaf; at the intermediate Joints between the Branches, come out the Flowers upon long Foot Stalks; before these expand, the Bud, with the Empalement, is gathered for pickling; but those which are left, expand in Form of a single Rose, having five large white Petals, which are roundish and concave; in the Middle is placed a great Number of long Stamina, surrounding a Style, which rises above them, and is crowned with an oval Germen, which becomes a Capsule, filled with Kidney-shaped Seeds.

This Sort is cultivated on old Walls about *Toulon*, and in *Italy*. Mr. Ray observed it growing naturally on the Walls and Ruins at *Rome*, *Sienna*, and *Florence*.

The 2d Sort hath weaker Stalks than the 1st, which are smooth, having no Spines on them; the Leaves are oval, smooth, and in their natural Place of Growth, continue through the Year; but in *England* the young Shoots are generally killed in Winter. From the Foot Stalk of the Leaves come out the Flowers, which stand upon very long Foot Stalks, and are produced singly; these Flowers are like those of the former, but are much larger; as are also the Buds; but these are not esteemed so good as those of the first for Pickling.

These Plants are with Difficulty preserved in *England*, for they delight to grow in Crevices of Rocks, and the Joints of old Walls or Ruins, and always thrive best in an horizontal Position; when planted either in Pots, or the full Ground, they rarely thrive, though they may be kept alive for some Years. They are propagated by Seeds in the warm Parts of *Europe*, but it is very difficult to get them to grow in *England*. I have several times sowed these Seeds without Success, as have many other Persons; I never raised any of the Plants from Seeds, but in the Year 1738, when I had three Plants come up in an old Wall, which being young and tender, were destroyed in 1740. There is an old Plant growing out of a Wall in the Garden at *Camden House* near *Kensington*, which has resisted the Cold for many Years, and annually produces many Flowers, but the young Shoots are killed to the Stump every Winter.

The Roots are annually brought from *Italy*, by those who import Orange Trees, some of which have been planted in Walls, where they have lived a few Years.

The 3d Sort I received from *Cartbagena* in *New Spain*, near which Place it grows naturally. This rises with a woody Stem, to the Height of 12 or 14 Feet, sending out many lateral Branches, covered with a russet Bark, and garnished with oblong oval Leaves, standing upon long Foot Stalks; the Flowers are produced, from the Side of the Branches, single, standing upon long Foot Stalks, which are like those of the last Sort.

The 4th Sort was sent me from *Cartbagena*. This grows with a strong upright Trunk, near 20 Feet high, sending out many lateral Branches, which are covered with a very white Bark, and are closely garnished with large oblong stiff Leaves, of a thicker Consistence than those of the common Laurel, of a splendid green, having several transverse Nerves from the Midrib to the Border, which are prominent on their under Side; the Flowers come out from the Side of the Branches, which are large, and the Summits of the Stamina are purple.

The 5th Sort was sent me from the same Country. This rises with a Trunk about 20 Feet high, sending out many long slender Branches, which are covered with a brown Bark, and garnished with Leaves like those of the Bay Tree, but longer, and deeply ribbed on their under Side, standing upon pretty long Foot Stalks, and come out in Clusters, without any Order. The Flowers are produced upon long Foot Stalks, which terminate the Branches, each sustaining two or three Flowers, which are large, white, and are succeeded by Pods two or three Inches long, and the Thickness of a Man's little Finger, which are filled with large Kidney-shaped Seeds: These Pods have a thick fleshy Cover.

The 6th Sort was sent me from *Tolu* in *America*. This rises with a shrubby Stalk, to the Height of eight or ten

Feet, sending out many ligneous Branches covered with a reddish brown Bark; these are garnished with oval stiff Leaves placed opposite, on short red Foot Stalks; from the Wings of the Leaves arise the Foot Stalks of the Flowers, which are long, slender, and branch out into many smaller, each of which sustains a small white Flower, which is succeeded by an oval Pod containing many small Kidney-shaped Seeds.

The 7th Sort rises with a shrubby Stem, to the Height of 12 or 14 Feet, sending out many strong lateral Branches, covered with a dark brown Bark, and garnished with oblong oval Leaves, placed alternately, which have very short Foot Stalks; the Leaves are of a thicker Consistence than those of the Bay Tree; at the Foot Stalk of each Leaf comes out a single Flower, almost the whole Length of the Branches, which are small, and stand upon short Foot Stalks; the Summits of these Flowers are of a purplish Colour, but the Stamina are white.

The 8th Sort rises with a shrubby Stalk, to the Height of 10 or 12 Feet, sending out slender horizontal Branches on every Side, which are covered with a reddish Bark; the Joints of these Branches are far distant; at each of these come out several Leaves in Clusters, without Order, standing upon pretty long Foot Stalks; they are six Inches long, and three broad in the Middle, and as thick as those of the Laurel, of a shining green, smooth on their upper Side, but have many transverse Ribs on their under Side, which are prominent. I received this and the 7th Sort from *Tolu*.

The 9th Sort I received from *Carthagera*, where it grows naturally; this hath many shrubby Stalks arising from the Root without Order, which send out many lateral Branches on every Side, and are closely garnished with large Spear-shaped Leaves, standing upon very long Foot Stalks; the Flowers are produced in Clusters at the End of the Branches, upon very short Foot Stalks, they are small, white, with yellowish Stamina, and a very long Style, which is incurved, terminated by an oblong Germen, which afterwards becomes an oblong Fruit.

The 10th Sort hath slender shrubby Stalks, which rise 7 or 8 Feet high, sending out many ligneous Branches, garnished with very long nervous Spear-shaped Leaves. The Flowers come out at the End of the Branches, three standing upon each Foot Stalk; these are small, white, and are succeeded by oval Fruit.

These last 8 Sorts are Natives of warm Countries, so will not live through the Winter in *England*, without the Assistance of a Stove. They are propagated by Seeds, which must be procured from the Countries where they grow naturally, for they do not produce any in *England*; they must be sown in small Pots, filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark; they must be now and then refreshed with Water, but by no Means give it in too great Plenty: In about two Months the Plants will appear, provided the Seeds are good, when they must have but little wet, and a good Share of Air in warm Weather; when they are large enough to remove, they must be each transplanted into a small Pot, filled with the same Earth, and plunged into the hot Bed again, observing to shade them until they have taken fresh Root, after which they should have fresh Air admitted to them every Day, in Proportion to the Warmth of the Season. In Autumn they must be removed into

the Stove, and plunged in the Bark Bed, where they should constantly remain, and require the same Treatment as other tender exotics, with this Difference only, that they require but little Water, especially during the Winter, for their Roots are very subject to rot with Wet.

If the Seeds are brought over in their Capsules, they will keep much better than without them; these should be secured from Insects, by wrapping them in Tobacco Leaves which are well dried; without this Precaution, the Seeds will be destroyed before they arrive.

BEAN CAPEER. See *Zygophyllum*.

CAPRARIA. *Lin. Gen. Plant.* 686. Sweet Weed.

The Characters are,

It hath a permanent Empelement of one Leaf, cut into five oblong narrow Segments, which are erect and stand asunder; the Flower is Bell-shaped, of one Leaf, divided at the Top into five equal Parts, the two upper standing erect; it hath four Stamina, inserted in the Base of the Petal, and but little more than half so long, two of the under being shorter than the other, and terminated by Heart-shaped Summits; it hath a conical Germen supporting a slender Style, longer than the Stamina, crowned by a bivalve Heart-shaped Stigma. The Germen afterward becomes an oblong conical Capsule, compressed at the Point, having two Cells, divided by a Partition filled with roundish Seeds.

We have but one Species of this Genus, viz.

CAPRARIA *foliis alternis corollis quinquefidis. Hort. Cliff.* 320. *Capraria* with alternate Leaves, and the Petal divided into five Parts. This is the *Capraria Curassavica. Par. Bat.* 110. *Capraria* of *Curasso*.

This Plant grows naturally in the warm Parts of *America*, where it is often a troublesome Weed in the Plantations; it rises with an angular green Stalk, about a Foot and a Half high, sending out Branches at every Joint, which sometimes come out by Pairs opposite, but generally there are three at a Joint standing round the Stalk; the Leaves are also placed round the Branches by threes; these stand upon short Foot Stalks, are oval, hairy, and a little indented on their Edges. The Flowers are produced at the Wings of the Leaves, coming out on each Side the Stalk, each Foot Stalk sustaining three white Flowers; and succeeded by conical Capsules, compressed at the Top, opening in two Parts, and filled with small Seeds. This Plant is preserved in Botanick Gardens for Variety; but as it hath no great Beauty, is seldom admitted into other Gardens.

It is propagated by Seeds, sown upon a hot Bed in Spring, and the Plants must be brought forward by planting them upon a second hot Bed; about the latter End of June they may be transplanted into Pots of rich Earth, or a warm Border, and may then be exposed to the open Air, where they will perfect Seeds in Autumn.

CAPREOLATE Plants; such as twist and climb upon others, by means of Tendrils.

CAPRIFOLIUM. See *Periclymenum*.

CAPSICUM. *Lin. Gen. Plant.* 225. *Tourn. Inst. R. H.* 152. *Tab.* 66. Guinea Pepper; in *French*, *Poivre d'Inde*; or *de Guinée*.

The Characters are,

The Flower hath a permanent Empelement of one Leaf, divided into five Parts, and erect. It hath but one Petal, which is Wheel-shaped, having a very short Tube, spread open

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open above, and divided into five Parts; it hath five small Stamina, terminated by oblong Summits, which are connected. It hath an oval Germen, supporting a slender Style, longer than the Stamina, and crowned by an obtuse Stigma. The Germen becomes a soft Fruit, or Capsule, of an indeterminate Figure, having two or more Cells divided by Partitions, to which adhere many compressed Kidney-shaped Seeds.

The Species are,

1. *CAPSICUM caule herbaceo, fructu oblongo propendente.* Capsicum with an herbaceous Stalk, and an oblong Fruit hanging downward. *Capsicum siliquis longis propendentibus.* Tourn. Inst. 152. Capsicum with long hanging Pods.
2. *CAPSICUM caule herbaceo fructu Cordiformi.* Capsicum with an herbaceous Stalk, and a Heart-shaped Fruit. This is the *Capsicum siliqua propendente oblonga & Cordiformi.* Tourn. Inst. 152. Capsicum with an oblong Heart-shaped Pod hanging downward.
3. *CAPSICUM fructu longo, ventre tumido, per summum tetragono.* Tourn. Inst. 153. Capsicum with a long Fruit, having a swelling Belly, and square at the Top, commonly called Bell Pepper.
4. *CAPSICUM siliquis surrectis cordiformibus angulatis.* Tourn. Inst. R. H. 153. Capsicum with angular Heart-shaped Pods, which grow erect, commonly called Bonnet Pepper.
5. *CAPSICUM caule herbaceo, fructu rotundo glabro.* Capsicum with an herbaceous Stalk, and a round smooth Fruit. *Capsicum siliquis surrectis Cerasi forma.* Tourn. Inst. Capsicum with a Cherry-shaped Pod growing upright.
6. *CAPSICUM caule herbaceo, fructu ovato.* Capsicum with an oval Fruit. This is the *Capsicum siliqua olivae forma.* Tourn. Inst. Capsicum with an Olive-shaped Pod.
7. *CAPSICUM caule fruticoso foliis lineari-lanceolatis, fructu pyramidalis erecto luteo.* Capsicum with a shrubby Stalk, narrow Spear-shaped Leaves, and yellow pyramidal Fruit growing upright.
8. *CAPSICUM caule fruticoso fructu conico erecto rubro.* Capsicum with a shrubby Stalk, and a conical red Fruit growing erect, commonly called Hen Pepper.
9. *CAPSICUM minus fructu parvo pyramidalis erecto.* Sloan. Hist. Jam. Vol. I. p. 240. Smaller Capsicum with a small pyramidal erect Fruit, commonly called Barberry Pepper.
10. *CAPSICUM caule fruticoso, fructu parvo ovato erecto.* Capsicum with a shrubby Stalk, and a small oval Fruit growing erect, commonly called Bird Pepper.

The first is the common long poded Capsicum, which is frequently cultivated in Gardens, of this there is one with red, and another with yellow Fruit, which only differ in the Colour of their Fruit, which Difference is permanent, for I have cultivated both Sorts many Years, and never have found them change from one to the other; but both will vary in the Shape of their Fruit and Manner of growing, for I have raised the following Varieties from the same Seeds, viz.

Capsicum fructu surrecto oblongo. Tourn. Capsicum with oblong Fruit growing erect.

Capsicum fructu bifido. Tourn. Capsicum with a divided Fruit.

Capsicum siliquis surrectis & oblongis brevibus. Tourn. Capsicum with oblong and short Pods growing erect.

Capsicum fructu tereti spithameo. Tourn. Capsicum with a taper Fruit a Span long.

Of these different Forms I have had both the red and yellow, but neither of them have changed their Colours, though they have frequently varied in their Shape.

The 2d Sort with Heart-shaped Fruit, is undoubtedly a different Species from the first, and never alters toward it, though there are several Varieties of this, which sprout from Seeds; of this there are red and yellow Fruit, which do not alter in Colour, though they produce the following Varieties.

Capsicum siliqua propendente rotunda & Cordiformi. Tourn. Capsicum with round, Heart-shaped, hanging Pods.

Capsicum siliqua latiore & rotundiore. Tourn. Capsicum with a larger and rounder Pod.

Capsicum rotundo maximo. Tourn. Capsicum with the largest round Fruit.

Capsicum siliquis surrectis cordiformibus. Tourn. Capsicum with upright Heart-shaped Pods.

Capsicum siliquis surrectis rotundis. Tourn. Capsicum with round upright Pods.

The 3d Sort I have cultivated many Years, and have not found it alter, nor have I seen any other but the red Fruit of this. It is the only Sort which is proper for pickling; the Skin of the Fruit being fleshy and tender, whereas those of the other Sorts are thin and tough. The Pods are from one Inch and a Half, to two Inches long, very large, swelling, and wrinkled; flated at the Top, where they are angular, and sometimes stand erect, at others grow downward. When the Fruit are designed for Pickling, they should be gathered before they arrive to their full Size, while their Rind is tender; then they must be slit down on one Side to get out the Seeds, after which, they should be soaked two or three Days in Salt and Water; when taken out of this and drained, boiling Vinegar must be poured on them, in a sufficient Quantity to cover them, and closely stopped down for two Months; then they should be boiled in Vinegar to make them green; but they want no Addition of any Sort of Spice, and are the wholesomest and best Pickle in the World.

The 4th Sort is also a distinct Species from all the other: This hath broad wrinkled Leaves, the Fruit is also furrowed and wrinkled, generally growing upright, and of a beautiful scarlet Colour: Some of the Fruit have their Tops compressed like a Bonnet, from whence it had the Name; others upon the same Plants will be Bell-shaped, but they never alter to any of the other Sorts. This is much tenderer than either of the former, so will not ripen its Fruit in the open Air in England; but if the Plants are kept under Glasses, without any artificial Heat, they will thrive better, and produce more Fruit, than in hot Beds or Stoves.

The 5th Sort was sent me from the Spanish West-Indies: This doth not grow so tall as the other Sorts, but spreads near the Ground. The Leaves come out in Clusters of a shining green, and stand on long Foot Stalks. The Fruit is round, smooth, of a beautiful red, and the Size of a common Cherry. I have cultivated this several Years, and have not found it change.

The 6th Sort I had from Barbadoes: This is like the common in it's Stalk and Leaves, but the Fruit is oval, and about the Size of a French Olive. I have cultivated this many Years, and never found it vary.

These 6 Sorts are annual with us, whatever they may be in their native Countries, for their Stalks decay soon after the Fruit is ripe. They are propagated by Seeds, which must be sown upon a hot Bed in Spring; and when the Plants have six Leaves, they should be transplanted on another hot Bed, at four or five Inches Distance, shading them from the Sun, until they have taken Root, after which, they must have a large Share of Air admitted them in warm Weather, to prevent their drawing up weak, and they require to be frequently watered. Toward the End of May, the Plants must be hardened by Degrees to bear the open Air, and in June they should be carefully taken up, preserving as much Earth about their Roots as possible, and planted into Borders of rich Earth, observing to water them well, as also to shade them until they have taken Root, after which Time, they will require no other Management, but to keep them clean from Weeds, and in very dry Seasons, to refresh them two or three times a Week with Water. They flower the End of June, and July, and their Fruit ripens in Autumn. These Directions are for the Culture of the common Sorts of *Capsicum*, which are generally planted by way of Ornament. But the Plants of the third Sort, which are propagated for Pickling; should be planted in a rich Spot of Ground, in a warm Situation, about a Foot and a Half asunder, and shaded till they have taken Root, and afterward duly watered in dry Weather; which will greatly promote their Growth, and cause them to be more fruitful, as also enlarge the Size of the Fruit. By this Management, there may be at least two Crops of Fruit for Pickling, obtained the same Year, provided the Season proves not too cold; but there should be one Plant, whose Pods are large and forward, chosen to save Seeds; the first Fruits on this should be suffered to remain, that they may have Time to perfect their Seeds; before the Frost comes in Autumn; for the early Frost generally destroys these Plants. When the Fruit is fully ripe, it should be cut off, and hung up in a dry Room till Spring, that the Seeds are wanted.

The 4th, 5th, and 6th Sorts being tender, the Plants should be put into Pots, and placed in an old hot Bed under a deep Frame, where they may have Room to grow; or if they are planted in the full Ground, the Plants should be each covered with a Bell Glass, to screen them from Cold. These Glasses may be set off every Day in warm Weather, and placed over them in the Evening again; and at such Times as the Weather is not favourable, the Glasses should be raised on the contrary Side to the Wind, to admit the fresh Air. With this Care, the Fruit of these Sorts will ripen in England, which without it, rarely come to Maturity, but in very warm Seasons.

The Beauty of these Plants is in their ripe Fruit, which being of different Forms and Colours, intermixed with the green Leaves, and white Flowers at the same Time, make a pretty Appearance in the latter Part of Summer, when they are properly disposed in the Borders of the Flower Garden; or if they are planted in Pots, for the Decoration of Courts, &c. being intermixed with other annual Plants, which are in Beauty at the same Season, they will make an agreeable Variety; especially, if as many of the different shaped

Fruits, of both the red and yellow Colours as can be procured, are propagated.

The four last Sorts have perennial shrubby Stalks, which rise four or five Feet high; these are not so hardy as the other, therefore when the Plants have been brought forward in the hot Bed, as directed for the common Sorts, they should be each planted in a Pot filled with rich Earth, and plunged into a very moderate hot Bed, under a deep Frame, where they may have Room to advance; and in warm Weather, they should have a large Share of Air admitted to them, but must be covered with Glasses every Night, or in cold Weather, and frequently watered. With this Management, they will produce Plenty of Fruit in Autumn, which ripen in Winter; but they must be removed into the Stove, on the first Approach of Frost, and placed where they may have a temperate Warmth, in which they will thrive better than in greater Heat; and the Fruit will continue in Beauty most Part of Winter, making a pretty Appearance in the Stove, during that Season.

The Seeds of the 7th Sort I received from Egypt: The Leaves are much narrower than those of any other Sort I have yet seen; the Pods always grow erect, and are produced in great Plenty, so that the Plants make a good Appearance for three Months in Winter, and may be preserved two or three Years; but as the young Plants are the most fruitful, few Persons preserve the old longer, than till they have perfected Fruit, when they begin to lose their Beauty. I have cultivated this Sort several Years, and never found it vary.

The 8th Sort I received from Antigua, by the Title of Hen Pepper. This rises with a shrubby Stalk 3 or 4 Feet high, sending out many Branches toward the Top: The Fruit is about half an Inch long, shaped in form of an obtuse Cone, and of a bright red, growing erect. This ripens its Fruit in Winter, when it makes a pretty Appearance.

The 9th Sort grows about the same Height as the 8th, but differs from it in the Shape and Size of the Fruit: Those of this Sort being about the Bigness of a Barberry, and nearly of the same Shape. This I have long cultivated, and not observed it to alter.

The 10th Sort is commonly known by the Title of Bird Pepper in America. This rises with a shrubby Stalk four or five Feet high: The Leaves are broad, and rounder at the Ends than those of the other Sorts, and of a lucid green: The Fruit grows at the Divisions of the Branches, standing erect: These are small, oval, and of a bright red; they are much more sharp and biting than those of the other Sorts. From the Fruit of this Sort, is made the Cayen Butter, or what the Inhabitants of America call Pepper Pots, which they esteem as the best of all the Spices. The following is a Receipt for making a Pepper Pot: Take of the ripe Pods of this Sort of *Capsicum*, and dry them well in the Sun, then put them into an Earthen or Stone Pot, mixing Flour between every Strata of Pods, and put them into an Oven after the baking of Bread, that they may be thoroughly dried; after which, they must be well cleaned from the Flour, and if any of the Stalks remain to the Pods, they should be taken off, and the Pods beaten, or ground to fine Powder; to every Ounce of this, add a Pound of Wheat Flour, and as much Leaven as is sufficient

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cient for the Quantity intended; after this has been properly mixed and wrought, it should be made into small Cakes, and baked in the same Manner as common Cakes of the same Size; then cut them into small Parts, and bake them again, that they may be as dry and hard as Biscuit, which, beaten into fine Powder and sifted, may be kept for Use. This may be used as the common Pepper, to season Meat or Broth, or for any of the Purposes that the ordinary Pepper is used: It gives a better Relish to Meat or Sauce, and is found of excellent Use to break and discuss the Wind, both in the Stomach and Bowels; therefore is very proper Sauce for such Meats as are flatulent and windy, or that breed much Moisture or Crudity. A Scruple of this Powder put into Chicken or Veal Broth, is greatly commended for comforting cold Stomachs, or dispelling Phlegm or viscous Humours, and helping Digestion.

Most of the Sorts of *Capsicum* are Natives of both the Indies; but they have been brought to Europe from America, where they abound in all the Caribbee Islands, and are by the Inhabitants greatly used in all their Sauces; but especially by the Negroes, who are great Devourers of them; from whence it had the Appellation of Negro Pepper, and probably the Title of Guinea Pepper may have been applied to it for the same Reason. In Spain and Portugal the Fruit are much cultivated, and used for the same Purposes as in America; but in England, they are chiefly cultivated for Ornament, being rarely used for Sauce, or Medicine; though much used for both, in several other Countries.

If the ripe Pods of *Capsicum* are thrown into the Fire, they will raise strong and noisome Vapours, which occasion vehement Sneezing, Coughing, and often Vomiting, in those who are near the Place, or in the Room where they are burnt. Some have mixed the Powder of the Pods with Snuff, to give to others for Diversion, but where it is in Quantity, there may be Danger in using it, for it will occasion such violent Fits of Sneezing, as to break the Blood Vessels of the Head, as I have observed in some to whom it has been given.

CAPSULATE Pods [of *Capsula*, Lat. a Chest] are little, short dry Seed Vessels of Plants.

CAPSULATED Plants, are such as produce their Seeds in short Pods or Husks.

CARACALLA. See Phaeolus.

CARAGANA. See Orobus.

CARDAMINDUM. See Tropaeolum.

CARDAMINE. Lin. Gen. Plant. 727. Tourn. Inst. R. H. 224. Tab. 109. Ladies Smock.

The Characters are,

The Empalement of the Flower is composed of four oval, oblong Leaves. The Flower hath four oblong Petals, placed in form of a Cross, which at their Base are erect, but spread open above, and are much larger than the Empalement; it hath six Stamina, four of which are the Length of the Empalement; the other two, which are opposite, are much longer; These are terminated by oblong Heart-shaped Summits, which are erect. It hath a slender cylindrical Germen, as long as the Stamina, having no Style, but is crowned by an obtuse Stigma. The Germen turns to a long compressed cylindrical Pod, with two Cells, opening in two Valves which twist spirally, and cast out the Seeds when ripe, by their Elasticity.

The Species are,

1. CARDAMINE foliis pinnatis, foliolis radicalibus subrotundis, caulinis lanceolatis. Lin. S. P. 656. Ladies Smock with winged Leaves, whose smaller Leaves at Bottom, are roundish, but those on the Stalks Spear-shaped. This is the *Cardamine pratensis magno flore purpurascens*. Tourn. Meadow Ladies Smock with a large purplish Flower.

2. CARDAMINE foliis pinnatis, foliolis incis, floribus exiguis, caule erecto ramoso. Ladies Smock with winged Leaves, cut Lobes, very small Flowers, and an upright branching Stalk. *Cardamine annua exiguo flore*. Tourn. Annual impatient Cress, with a very small Flower.

3. CARDAMINE foliis pinnatis, floribus tetrandis. Hort. Cliff. Ladies Smock, with winged Leaves, and Flowers with four Stamina. *Cardamine quarta Dalechamp*. Lugd. The 4th impatient Cress of Dalechamp.

4. CARDAMINE pratensis parvo flore. Tourn. Inst. 224. Meadow impatient Cress with a small Flower.

5. CARDAMINE foliis pinnatis foliolis palmatis aequalibus petiolatis. Prod. Ley. 345. Impatient Cress with winged Leaves, whose small Leaves are handed and equal, having Foot Stalks. This is the *Cardamine Sicula, foliis Fumariae*. Tourn. Inst. 224. Sicilian impatient Cress with Fumitory Leaves.

6. CARDAMINE foliis pinnatis, foliolis subrotundis angulosis. Hall. Helv. 558. Impatient Cress with winged Leaves, whose small Leaves are roundish and angular. This is the *Nasturtium aquaticum majus & amarum*. C. B. P. 104. Greater bitter Water Cress.

7. CARDAMINE foliis ternatis obtusis, caule subnudo. Lin. Sp. Plant. 654. Three leaved impatient Cress with a naked Stalk. This is the *Nasturtium Alpinum trifolium*. C. B. P. 104. Alpine three leaved Cress.

8. CARDAMINE foliis simplicibus ovatis integerrimis petiolis longis. Flor. Lap. 206. Impatient Cress with single, oval, entire Leaves, having long Foot Stalks. This is the *Nasturtium Alpinum Bellidis folio minus*. C. B. P. 105. Smaller Alpine Cress with a Daisy Leaf.

9. CARDAMINE foliis simplicibus oblongis dentatis. Lin. Sp. Plant. 654. Impatient Cress with single, oblong, indented Leaves. This is the *Nasturtium petraeum*. Pluk. Ain. 261. Rock Cress.

10. CARDAMINE foliis pinnatis foliolis quinis incis. Lin. Sp. Plant. 655. Impatient Cress with winged Leaves, having Lobes which are cut. This is the *Cardamine glabra Chelidonii folio*. Tourn. Inst. 225. Smooth impatient Cress, with a Celandine Leaf.

The 1st Sort grows naturally in the Meadows, in many Parts of England; it is called Cuckow Flower, and Ladies Smock: Of this there are four Varieties, viz. The single purple, and white Flower, which are frequently intermixed in the Meadows, and the double Flower of both Colours. The single Sorts are seldom admitted into Gardens; but as the first Sort stands in the List of Medicinal Plants, so I have enumerated it. The young Leaves of this Plant are gathered in Spring, and put into Sallets instead of Cress: It is supposed to be an Antiscorbutick.

The two Varieties with double Flowers, were accidentally found growing in the Meadows, and were transplanted into Gardens, where they have been propagated. They deserve a Place in shady moist Borders of the Flower Garden, where they will thrive, and make

make a pretty Appearance during their Continuance in flower. They are propagated by parting and transplanting their Roots; the best Time for which is in Autumn. They delight in a soft loamy Soil, not too stiff, and must have a shady Situation. They flower in May, and in cool Seasons will continue Part of June.

The 7th, 8th, and 10th Sorts, grow naturally on the Alps and other mountainous Places. I received these from Verona, in the Neighbourhood of which Place they grow naturally. These are low perennial Plants, which may be propagated by parting their Roots in Autumn, and require a strong Soil, and shady Situation: They may also be propagated by Seeds, which should be sown in Autumn on a shady Border, where they will soon come up, and are never hurt by Frost, so will flower the following Season. These Varieties are preserved in some Gardens, but have little Beauty.

The 9th Sort is a low biennial Plant, which grows naturally in several Parts of England and Wales; and is preserved in some Gardens, for Variety. It may be propagated by Seeds, which should be sown in Autumn, upon poor light Ground in an open Situation, and requires no other Care, but to keep the Plants clear from Weeds. It flowers in June, and the Seeds ripen in July.

The 6th Sort grows naturally by the Sides of Rivers, and in Ditches, in most Parts of England. There has been a Variety of this found with double Flowers, but it is not as yet much known. This flowers the latter End of April, and in May.

The other Sorts are low annual Plants, which grow naturally in several Parts of England, so are seldom admitted into Gardens. These have the Title of impatient Cress, from the Elasticity of their Pods, which, if touched when they are ripe, spring open, and cast out their Seeds with Violence, to a considerable Distance. These Sorts when young, are by the Country People eaten in Sallets, and have the Flavour of the common Cress, but milder.

These Plants when admitted into a Garden, propagate in Plenty; for they produce great Quantities of Seeds, which, if permitted to scatter, there will be a Supply of Plants, which only require to be kept clean from Weeds, and will thrive best in the Shade.

CARDIACA. Tourn. Inst. R. H. 186. Tab. 87. Motherwort; in French Agripaume.

The Characters are,

It hath a cylindrical five cornered Empalement of one Leaf, which is permanent, and divided into five Parts at the Top. The Flower is of the Lip Kind, of one Leaf, with a narrow Tube spreading at the Brim; the upper Lip is cylindrical, long, concave, hairy, and blunt at the Point; the lower Lip is reflexed and divided into three equal Parts. It hath four Stamina fastened to the upper Lip, two of which are longer than the other, which are terminated by oblong compressed Summits, which are bifid in the Middle, and covered with globular Spots. It hath four Germen, supporting a slender Style the Length of the Stamina, crowned with an acute bifid Stigma. The Germen afterward becomes four naked oblong Seeds, inclosed in the Empalement.

The Species are,

1. **CARDIACA foliis radicalibus quinquelobatis, caulinis trilobis acutis.** Motherwort whose lower Leaves have five Lobes, and those on the Stalks three, with sharp Points. This is the Common Motherwort.

2. **CARDIACA foliis tripartito multifidis linearibus obtusiusculis.** Motherwort with Leaves divided into three Parts, which terminate with many very narrow blunt Segments. *Ballota inodora foliis Coronopi.* Amman. Ruth. Unfavoury black Horehound with a Hartshorn Leaf.

3. **CARDIACA foliis tripartitis laciniatis, calycibus villosis.** Motherwort with Leaves divided into three Parts, which are cut on their Edges, and hairy Empalements. This is the *Cardiaca foliis tenuius & profundius incisus glabra five villosa.* Am. Ruth. 49. Motherwort with narrow and deeply cut Leaves.

The 1st Sort is the common Motherwort used in Medicine. It grows naturally on the Side of Banks, and in Lanes, in many Parts of England, so is seldom cultivated in Gardens, unless for the Sake of Variety.

The lower Leaves of this Sort are large, and divided into five Lobes, the Stalks are square, and rise from four to five Feet high, which are garnished with two Leaves standing opposite at each Joint upon long Foot Stalks; these are divided into three Lobes, which end in long acute Points. The Flowers come out at every Joint in Whorls, just above the Leaves, surrounding the Stalk; these are commonly red, and are included in prickly Empalements, which afterwards inclose four naked Seeds. The Root will abide many Years, and if the Seeds are permitted to scatter, they will fill the Ground near them with young Plants. It flowers in July, and the Seeds ripen in Autumn.

There are two Varieties of this Plant, one of which only differs in the Colour of the Flowers, which are white, and is supposed to have accidentally risen from the same Seeds; the other hath curled Leaves, and is by Mr. Ray, titled *Cardiaca crispata.* Hist. Plant. 572. This is supposed to be only a femal Variety, but it seldom, if ever, goes back to the first, so far as I have been able to discover from many Years Observation, in which Time I have frequently raised it from Seeds, which have constantly produced the same Species.

The Seeds of the 2d Sort were sent me from Petersburg, by Dr. Amman, who received them from Siberia. This is like the first Sort, and the Stalks grow about the same Height, but the Leaves are deeply cut into three Parts, which are again divided toward their Extremity into many narrow blunt Segments; the Root is biennial, and decays soon after the Seeds are ripe.

The Seeds of the 3d Sort I received from Istria. This hath a weaker Stalk than either of the former, but rises near the same Height. The lower Leaves are divided into five acute Parts, and those upon the Stalks into three, which are deeply jagged; these are smooth, and stand upon shorter Foot Stalks than those of the 1st Sort. The Empalement of the Flowers is hairy, but the Flower is like that of the common Motherwort. This is also a biennial Plant, which perishes soon after it has perfected its Seeds.

These two Sorts are preserved in Botanick Gardens, but are rarely cultivated in other Places; they rise easily from Seeds sown in the Spring upon a Bed of common Earth, and require no other Care but to keep them clean from Weeds, and thin them where they are too close. In Autumn the Plants may be transplanted where they are designed to flower and seed, and require no further Culture. They flower in July, and their Seeds ripen

ripen in September, soon after which the Plants decay.

CARDINALS FLOWER. See *Rapuntium*.

CARDIOSPERMUM. *Lin. Gen. Plant.* 447. *Corindum. Tourn. Inst.* Heart Pea; by the Inhabitants of America called Wild Parsley; by the French, *Pois de Merveille*.

The Characters are,

The Flower hath a permanent Empalement, composed of four concave Leaves; it hath four obtuse Petals, which are alternately larger; it hath a small four-leaved Nectarium encompassing the Germen, and eight Stamina, three and three standing opposite, the other two on each Side; these are terminated by small Summits. The Germen is three cornered, and supports three short Styles, crowned by a single Stigma. The Germen becomes a roundish swollen Capsule with 3 Lobes, divided into 3 Cells, opening at the Top, each having one or two globular Seeds, marked with a Heart.

The Species are,

1. **CARDIOSPERMUM foliis ternato-ternatis acuminatis incisif, petiolis longissimis.** Heart Seed with trifoliate Leaves, divided again into three Parts, which are sharp-pointed, and cut on their Edges. This is the *Corindum folio & fructu minori. Tourn. Inst.* Heart Pea with a smaller Leaf and Fruit, called in America Wild Parsley.

2. **CARDIOSPERMUM foliis quinato-ternatis acuminatis incisif glabris.** Heart Seed with Leaves divided into five, and those divided into three Parts, which are sharp-pointed, cut on their Edges, and smooth. This is the *Corindum folio ampliori, fructu majore. Tourn. Inst.* 431. Heart Pea with a larger Leaf and Fruit.

3. **CARDIOSPERMUM villasum foliis quinato-ternatis, incisif obtusif, petiolis brevibus.** Hairy Heart Seed with Leaves divided by fives, and those divided again into three Parts, which are bluntly cut, and have short Foot Stalks. *Corindum caule & foliis pubescentibus. Housl. Mss.* Heart Pea with hairy Stalks and Leaves.

The 1st Sort rises with a slender channeled climbing Stalk, to the Height of four or five Feet, sending out many Side Branches, which are garnished with Leaves, upon very long Foot Stalks, coming out opposite at the lower Part of the Stalk: but upward the Leaves come out on one Side, and the Foot Stalk of the Flower on the other, opposite; the Foot Stalks of the Leaves are divided into three, each of which sustain small Leaves, which are again divided into three Parts, sharply cut on their Edges, and end in sharp Points. The Foot Stalks of the Flowers are long, naked, and toward the Top, divided into three short ones, each sustaining a single Flower. Immediately under these Divisions, comes out a Tendril, or Clasper, like those of the Vine, but smaller, these fasten themselves to whatever grows near them, and thereby are supported. The Flowers are small, white, and composed of four small concave Petals, two of which standing opposite, are larger than the other; when these fall away, the Germen becomes a large inflated Bladder, having three Lobes, in each of which is contained one, two, and sometimes three Seeds, which are round, hard, and the Size of small Peas, each being marked with a black Spot in the Shape of a Heart.

The 2d Sort differs from the first in having taller Stalks, the Leaves being first divided into five, and again into three Parts. The Foot Stalks are shorter, and the Seeds

and Bladders in which they are contained are much larger, and the whole Plant is smoother.

The 3d Sort hath stronger Stalks than either of the former; the Leaves have very short Foot Stalks; they have each five Parts, which are again divided into three obtuse Lobes, bluntly indented on their Edges, and the whole Plant is covered with a yellowish hairy Down.

These Plants grow naturally in both Indies, where they rise 8 or 10 Feet, but in England they seldom are above half so high; they send out many Side Branches, which spread to a considerable Distance every Way, and, if permitted, will fasten themselves to the Plants which are near them by their small Tendrils, and thereby spread over them.

They are annual, and perish soon after they have perfected Seeds, and being Natives of hot Countries, they will not thrive in England in the open Air. They are propagated by Seeds, which should be sown upon a hot Bed in Spring; when the Plants are two Inches high, they should be each transplanted into a Pot filled with light sandy Earth, not too rich, then plunged into a very moderate hot Bed, where they must be carefully shaded until they have taken fresh Root, after which they must have a large Share of Air admitted to them every Day, to prevent their being drawn up tall and weak; when their Roots fill the Pots, they should be carefully shaken out, preserving all the Earth to their Roots (for if that should fall off, the Plants will not survive it) then put them into Pots a little larger, filling them up with the same light Earth, and place them either under a deep Frame, or behind the tall Plants in a Stove, where they may be screened from the Sun till they are well settled in the Pots, after which they may be removed into a Glass Case, where they may have Room to grow and be screened from the Cold of the Night, but in warm Weather they require a large Share of Air; with this Management they will flower in July, and their Seeds ripen in Autumn.

CARDUUS. *Lin. Gen. Plant.* 832. *Tourn. Inst. R. H.* 440. *Tab.* 255. Thistle, in French *Charlton*.

The Characters are,

It hath a compound Flower, made up of many hermaphrodite Florets which are fruitful; these are included in one common scaly Empalement, which is swollen in the Middle, each Scale ending in a sharp Spine; the Florets are Funnel-shaped, and of one Leaf, having a slender Tube, with an erect Brim, cut into five narrow Segments; each of these Florets have five short hairy Stamina, terminated by cylindrical Summits, indented at the Top. In the Center is situated an oval Germen, crowned with Down, supporting a slender Style which is longer than the Stamina, crowned with a single naked indented Stigma. The Germen becomes an oblong four cornered Seed, crowned with Down.

The Species are,

1. **CARDUUS foliis integris subtus tomentosis, spinis ramosis lateralibus.** *Prod. Leyd.* Thistle with entire Leaves, woolly on their under Side, and branching Spines proceeding from the Side of the Stalks. *Carduus humilis aculeatus, Flammica austriaca-folii.* *Triumph. obs.* Low prickly Thistle with Leaves like the Eternal Flower.

2. **CARDUUS foliis sessilibus bisariam pinnatifidis laciniis alternis cretatis, calycibus globosis villosis.** *Hort. Up.* Thistle with Leaves growing close to the Stalks, which are doubly pinnated, and the Segments alternately erect, and

and globular woolly Heads. This is the *Carduus eriocephalus*. *Dod. pempt.* 723. Woolly-headed Thistle, called by some Friars Crown.

3. *CARDUUS foliis lanceolatis dentatis ciliatis decurrentibus, spinis marginalibus duplicibus*. Thistle with Spear-shaped indented Leaves, running along the Stalks, with hairy Edges, and double Spines on their Borders. *Acarna major caule folioso*. C. B. P. Greater Fish Thistle.

4. *CARDUUS squamis calycinis margine apiceque spinosis*. Hort. Cliff. Thistle with the Scales of the Empalement, having Spines on their Borders and Points. *Carduus Mariae*. *Dalecb. Hist.* Our Ladies Thistle, or Milk Thistle.

5. *CARDUUS foliis lanceolatis decurrentibus denticulatis inermibus, calyce spinoso*. Hort. Cliff. 392. Thistle with Spear-shaped Leaves running along the Stalks, with smooth Indentures, and prickly Empalement. *Cirsium Anglicum*. Ger. Emac. English soft or gentle Thistle.

6. *CARDUUS foliis lanceolatis sessilibus integerrimis margine spinis ternatis*. Hort. Cliff. 393. Thistle with entire Spear-shaped Leaves growing close to the Stalks, whose Borders are set with triple Spines. This is the *Acarna Theophrasti anguillariae*. *Lob. Icon.* 486. The supposed true Fish Thistle of *Theophrastus*.

There are a great Number of Species more than are here enumerated; some of which are very troublesome Weeds in Gardens and Fields, therefore are better to be kept out of both; so I thought it needless to mention them. The few Sorts here enumerated, being often preserved in the Gardens of the Curious for Variety, or cultivated for Use by some, I have therefore inserted them.

The 1st Sort grows naturally in *Sicily*. This is an annual Plant, which rises with a channeled Stem about a Foot high, sending out several Side Branches toward the Top, garnished with long narrow Leaves, like those of *Austrian Ptarmica*, of a deep green above, but white on their under Side, and placed alternate; just below the Foot Stalk of the Leaf come out several unequal yellow Spines, and at the End of the Branches the Flowers are produced, these have very prickly Empalements, under which are placed two long Leaves; the Flowers are purple, and shaped like those of the common Thistle, but smaller; these are succeeded by oblong smooth Seeds, which have a long woolly Down sitting on their Top. This flowers in *July* and *August*, and the Seeds ripen in *September*; it is propagated by Seeds, which should be sown on a Bed of light Earth in Spring, where the Plants are to remain, for they do not bear transplanting unless when they are young, for they send long slender Roots deep into the Ground, which, if broken, the Plant seldom survives it. The only Care they require, is to keep them clean from Weeds, and thin the Plants where they are too close.

The 2d Sort grows naturally in several of the Midland Counties of *England*. This is a biennial Plant, which sends out many long Leaves near the Ground, which are composed of several long Segments, placed by Pairs, and are joined to a winged Border running on each Side the Mid-rib the whole Length; these Segments are alternately pointing upward; the under Side of the Leaves, and the Margin of the Mid-rib, are armed with long sharp Spines, standing every Way. The following Spring, there arises from the Center of the Plant one strong channeled Stalk, four or five Feet high, branching every way

toward the Top: The Stalk and Branches are garnished with the same shaped Leaves as below, and each Branch is terminated by a single Head of purple Flowers, having a woolly Empalement. This flowers in *June* and *July*, and the Seeds ripen in Autumn. One or two of these Plants may be allowed a Place in some abject Part of the Garden, for its Singularity. The Seeds should be sown where the Plants are to remain, and require only to keep them clean from Weeds: The second Year they flower, and then the whole Plant perishes.

The 3d Sort grows naturally in *Spain* and *Portugal*. This rises near 3 Feet high, branching toward the Top; the Leaves are long, narrow, and the Edges are set closely with small Hairs; at every Indenture of the Leaves there comes out two long yellowish Spines; at the End of the Branches the Flowers are produced from the Side of the Stalk, which have woolly oval Empalements, closely armed with slender Spines. The Flowers are yellow, but make no great Appearance, as they advance very little above the Empalement. It flowers in *July* and *August*, and the Seeds ripen in Autumn. This Plant may be propagated by Seeds, in the same Manner as the former Sort. It is called Fish Thistle, from the Resemblance which the Spines have to the Bones of Fish.

The 4th Sort grows very common on the Side of Banks, and in waste Land in many Parts of *England*, and is by some Persons blanched and dressed, as a curious Dish. This is a biennial Plant, which should be sown very thin, and when the Plants come up so as to be well distinguished, the Ground should be hoed, to cut down all the young Weeds, and the Plants left about a Foot and a Half distance; the following Summer, the Ground should be kept clean from Weeds; in Autumn the Leaves of the Plants should be tied up, and the Earth drawn up close to blanch them; when properly whitened, they are fit for Use. This is a biennial Plant which perishes soon after the Seeds are ripe.

The 5th Sort is a biennial Plant, which is by some cultivated for medicinal Use, and has been supposed a Remedy for some Sort of Madness. This may be propagated by Seeds, as the second Sort. It grows naturally in the Northern Parts of *England*, and flowers in *June*.

The 6th Sort is supposed to be the true Fish Thistle of *Theophrastus*. This is a biennial Plant, which rises with an upright Stalk, six Feet high, and is garnished with long Spear-shaped Leaves, armed with triple Spines at every Indenture on their Edges; at the Top of the Stalks the Flowers come out in Clusters, which are of a purple Colour, and are succeeded by smooth, oval, black Seeds. It grows naturally in *Sicily* and the *Levant*. It is propagated by Seeds, as the 2d Sort, which should be sown on a warm Border, otherwise the Plants will not live through the Winter. It flowers in *June*, and the Seeds ripen in Autumn.

CARDUUS BENEDICTUS. See *Cnicus*.

CARDUUS FULLONUM. See *Dipsacus*.

CARICA. *Lin. Gen. Plant.* 1000. *Papaya*. *Tourn. Inst. R. H.* 659. *Tab.* 441. *Papaw*, in *French Papaw*.

The Characters are,

It is male and female in different Plants; the Flowers of the male have scarce any Empalement; they are Funnel-shaped, and of one Leaf, having a long slender Tube, which expands at the Top, where it is divided into five narrow ob-

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inse Parts, which turn backward; it hath ten Stamina, five of which are alternately longer than the other, and are terminated by oblong Summits. The female Flowers have a small permanent Emplacement, indented in five Parts; it hath five long Spear-shaped Petals, which are obtuse, and turn backward at the Top; the oval Germen supports five oblong blunt Stigma, which are broad at the Top, and crenated. The Germen afterward becomes a large oblong fleshy Fruit, having five longitudinal Cells, which are full of small oval furrowed Seeds, inclosed in a glutinous Pulp.

The Species are,

1. *CARICA foliorum lobis sinuatis*. Hort. Cliff. 461. Papaw with the Lobes of the Leaves sinuated. This is the *Papaya fructu Melopeponis effigie*. Plum. Papaw with the Fruit shaped like the Squash.

2. *CARICA foliorum lobis integris*. Hort. Cliff. 461. Papaw with the Lobes of the Leaves entire. This is the *Papaya ramosa fructu pyriformi*. Feuil. peruv. 2. p. 52. Tab. 39. Branching Papaw with a Pear-shaped Fruit.

There are several Varieties of the first Sort, which differ in the Size and Shape of their Fruit. Plumier mentions three of the female or fruitful Papaw, beside the male, one of which he titles Melon-shaped, and the other shaped like the Fruit of the Gourd; I have seen another in England, with a large smooth pyramidal Fruit: But these are supposed to be accidental Varieties, which arise from the same Seeds.

This Plant rises with a thick, soft, herbaceous Stem, 18 or 20 Feet, which is naked till within two or three Feet of the Top, and hath Marks of the fallen Leaves great Part of its Length; the Leaves come out on every Side the Stem, upon very long Foot Stalks; those which are situated undermost are almost horizontal, but those on the Top are erect: These Leaves (in full grown Plants) are very large, and divided into many Parts (or Lobes) which are deeply sinuated, or cut into irregular Divisions. The whole Plant abounds with a milky acrid Juice, which is esteemed good for the Ringworm: The Stem of the Plant, and also the Foot Stalks of the Leaves, are hollow in the Middle. The Flowers of the male Plants are produced from between the Leaves, on the upper Part of the Plant, on every Side, which have Foot Stalks near two Feet long, at the Ends of which the Flowers stand in loose Clusters, each having a separate short Foot Stalk; these are of a pure white, and have an agreeable Odour. They are monopetalous, having pretty long Tubes, but are cut at the Top into five Parts, which twist backward like a Screw; sometimes these are succeeded by small Fruit, about the Size and Shape of a Catherine Pear; which has occasioned some to suppose it was a distinct Species; but I have frequently raised this, and the female or fruitful Sort, from the same Seeds, and in general the male Flowers fall away, without any Fruit succeeding them. The Flowers of the female Papaw also come out between the Leaves, toward the upper Part of the Plant, upon very short Foot Stalks, sitting close to the Stem; they are large, and Bell-shaped, composed of six Petals, and are commonly yellow; but those of the pyramidal Sort, before mentioned, were purple; when these fall away, the Germen swells to a large fleshy Fruit, the Size of a small Melon, which are of different Forms; some are angular, and compressed at both Ends, others are oval or globular, and some pyramidal; the Fruit abounds with the same

acrid Juice as the Plants. This Fruit, when ripe, is by the inhabitants of the *Caribbee Islands* eaten with Pepper and Sugar as Melons, but is much inferior to a common Melon in Flavour, in its native Country; those which have ripened in England were detestable; the only Use I have known made of this Fruit, was, when they were about half grown, to soak them in salt Water, to get out the milky Juice, and pickle them for Mangos, for which they have been a good Substitute. These Plants are supposed to be Natives of America, from whence they were carried to the *Philippine Islands*, and to several Parts of India, where they are now common.

The 2d Sort was seen in a Garden at Lima by Father Feuillée; it was the only Plant he saw of that Sort in his Travels. This differs from the other, in having a branching Stalk, the Lobes or Divisions of the Leaves being entire, and the Fruit shaped like a Pear, which he says were of different Sizes; that which he designed was about 8 Inches long, and three and a Half thick, yellow within and without, and of a sweet Flavour. The Flower, he says, was of a Rose Colour, and divided into five Parts.

These Plants being Natives of hot Countries, will not thrive in England, unless in a warm Stove; where there is one of a proper Height to contain them, they deserve a Place as well as any of the Plants cultivated for Ornament; for when they are grown to a large Size, they make a noble Appearance, with their strong upright Stems, garnished on every Side near the Top, with large shining Leaves, spreading out near three Feet all round the Stem: the Flowers of the male Sort come out in Clusters on every Side; and the Fruit of the female growing round the Stalks, between the Leaves, so different from any thing of European Production, may intitle them to the Care of the Curious.

They are easily propagated by Seeds, which are annually brought in Plenty from the *West-Indies*. These should be sown in a hot Bed, early in Spring, that the Plants may obtain Strength before Autumn: When they are near two Inches high, they should be each transplanted into a small Pot filled with a light gentle loamy Soil, and plunged into a hot Bed of Tanners Bark, carefully shading them from the Sun till they have taken Root; after which they must be treated in the same Manner as other tender Plants from the same Country; but as these have soft herbaceous Stalks, and abound with a milky Juice, they must not have much Water, for they are frequently killed with Moisture. There should also be great Care taken when they are shifted from small Pots into larger, to preserve the whole Ball of Earth to the Roots, for whenever their Roots are left bare, they rarely survive. As the Plants advance in Growth, they will require larger Pots, and when they are too tall to remain under Frames, they must be placed in the Tan Bed of the Bark Stove, where they should constantly remain, being careful not to give them much Water, especially during the Winter Season; in Summer their Waterings should be often repeated, but given in small Quantities. With this Management I have raised Plants near 20 Feet high in 3 Years, which have produced Flowers and Fruit in great Perfection.

CARLINA. Lin. Gen. Plant. 830. Tourn. Inst. R. H. 500. Tab. 285. The Carlina Thistle.

The Characters are,

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It hath a compound Flower, made up of many hermaphrodite Florets which are fruitful; these are included in a common swollen scaly Empalement; the inner Scales are long, and placed in a circular Order. The Florets are Funnel-shaped, having a narrow Tube, but Bell-shaped above, and cut into five Parts at the Brim; these have each five short bairy Stamina, terminated by cylindrical Summits; in the Center is situated a short Germen crowned with Down, supporting a slender Style the Length of the Stamina, crowned with an oblong bifid Stigma. The Germen becomes a single taper Seed, crowned with branching plumose Down.

The Species are,

1. *CARLINA caule multifloro corymbose, floribus terminalibus.* Hort. Cliff. Carline Thistle with many Flowers in a Corymbus, which terminate the Stalk. *Carlina sylvestris vulgaris.* Clus. Hist. Common wild Carline Thistle.

2. *CARLINA floribus sessilibus, lateralibus paucissimis.* Sauv. Meth. Carline Thistle with a few Flowers growing close to the Side of the Stalk. *Carlina sylvestris minor Hispanica.* Clus. Hist. Small wild Spanish Carline Thistle.

3. *CARLINA caule unifloro flore brevior.* Hort. Cliff. 395. Carline Thistle with one shorter Flower on each Stalk. This is the *Carlina acaulis magno flore albo.* C. B. P. Low Carline Thistle with a large white Flower.

4. *CARLINA caule trifloro dicotomo intermedio sessili.* Sauv. Monsp. 293. Carline Thistle with three Flowers on a Stalk, placed at the Division of the Branches, the middle one sitting close upon the Stalk. This is the *Acarina flore purpureo rubente patulo.* C. B. P. 372. Fish Thistle with a redish purple spreading Flower.

5. *CARLINA caule multifloro subdiviso, floribus sessilibus.* Prod. Leyd. Carline Thistle with many Flowers on a Stalk, which is subdivided, and the Flowers sit close on the Stalks. This is the *Acarina apula umbellata.* Colum. cephr. 27. Umbellated Fish Thistle of Apulia.

The 1st Sort grows naturally on sterile Ground in most Parts of England, so is rarely admitted into Gardens. The others are preserved in Botanick Gardens for Variety. They grow naturally in the Southern Parts of Europe.

They may all be propagated by sowing their Seeds in Spring on a Bed of fresh undunged Earth, where they are designed to remain; for, as they send forth Tap Roots, they do not well bear transplanting. When the Plants appear above Ground, they should be carefully weeded; and, as they grow in Size, should be thinned, leaving them about ten Inches or a Foot asunder. The 2d Year most of these Plants will flower; but, unless the Summer proves dry, they rarely produce good Seeds in England; and most of them decay soon after they have flowered; therefore it is difficult to maintain them in this Country.

CARNATION. See Dianthus.

CARPINUS. Lin. Gen. Plant. 952. Tourn. Inst. R. H. 582: Hornbeam, or Hardbeam, in French Charme.

The Characters are,

I hath male and female Flowers, growing separate on the same Plant. The male Flowers are disposed in a cylindrical Rope or Katkin, which is loose and scaly, each Scale covering one Flower, which hath no Petals, but ten small Stamina, terminated by compressed bairy Summits. The female Flowers are disposed in the same Form, and are single under each Scale; these have one Petal, which is shaped like a Cup, cut into six Parts, and two short Germen, each

having two bairy Styles, crowned by a single Stigma. The Katkin afterward grows large, and at the Base of each Scale is lodged an oval angular Nut.

The Species are,

1. *CARPINUS squamis strobilorum planis.* Hort. Cliff. 447. Hornbeam with flat Scales to the Cones. This is the *Carpinus.* Dod. Pempt. 841. Common Hornbeam.

2. *CARPINUS squamis strobilorum inflatis.* Hort. Cliff. 447. Hornbeam with inflated Scales to the Cones. This is the *Ostrya ulmo similis, fructu racemoso lupulo similis.* C. B. P. 427. The Hop Hornbeam.

3. *CARPINUS foliis ovato-lanceolatis serratis strobilibus brevibus.* Hornbeam with oval Spear-shaped sawed Leaves, and the shortest Cones. This is the *Carpinus Orientalis folio minori, fructu brevi.* T. Cor. 40. Eastern Hornbeam, with a smaller Leaf and shorter Fruit.

4. *CARPINUS foliis lanceolatis acuminatis, strobilibus longissimis.* Hornbeam with pointed Spear-shaped Leaves, and the longest Cones. This is the *Carpinus Virginiana florescens.* Pluk. Virginia flowering Hornbeam.

The 1st Sort is very common in many Parts of England, but is rarely suffered to grow as a Timber Tree, being generally reduced to Pollards by the Country People; yet where the young Trees have been properly treated, they have grown to a large Size. I have seen some of them in Woods, upon a cold stiff Clay, which have been near seventy Feet high, with large noble fine Stems, perfectly strait and sound. Of late Years, this has been only considered as a Shrub, and never cultivated but for Under-wood in the Country, and in the Nurseries to form Hedges, after the French Taste; for in most of their great Gardens, their Cabinets, &c. are formed of these Trees, as are their Trellasses and Hedges which surround their Plantations. But since these Sort of Ornaments have been almost banished from the English Gardens, there has been little Demand for these Trees in the Nurseries.

As this Tree will thrive upon cold, barren, exposed Hills, and in Situations where few other Sorts will grow, it may be cultivated to great Advantage by the Proprietors of such Lands. It will resist the Violence of Winds better than most other Trees, and is by no Means slow in its Growth. But where these are propagated for Timber, they should be raised from Seeds, on the same Soil and Situation, where they are designed to grow; and not brought from better Land, and a warmer Situation, as is too frequently practised. They may be propagated by Layers, where they are intended for Hedges or Under-wood; for which those so raised will answer the Purpose full as well as those raised from Seeds, but the latter must always be preferred for Timber Trees.

The Seeds should be sown in Autumn, soon after they are ripe; for if they are kept out of the Ground till Spring, the Plants will not come up till the following Year. When the Plants appear, they must be kept very clean from Weeds, and treated as other Forest Trees; in two Years Time they will be fit to transplant, for the sooner all Trees which are designed for Timber are planted where they are to remain, the larger they will grow, and the Wood will be firmer and more durable. If these are not intermixed with other Kinds of Trees, they should be planted pretty close; especially on the

Out-

Outside of the Plantations, that they may protect and draw each other up: If they are kept clean from Weeds 3 or 4 Years, it will greatly promote their Growth, after which the Plants will have obtained sufficient Strength to keep down the Weeds.

As the Trees advance in Growth, they must be thinned, which should be done with Caution, cutting away the most unpromising Plants gradually, so as not to let too much cold Air at once, to those which are left, especially on the Borders of the Plantation. For in all young Plantations of Timber, it is much the better Method, to take away a few Trees every Year, than as is commonly practised, to let all grow till fit to cut as Underwood, and then cut all away, except those intended for Timber; whereby so much cold Air is suddenly let in upon them, as to stop their Progress for some Years: But by this Method a present Advantage is gained, which is now more generally attended to, than future Profit.

The Timber of this Tree is very tough and flexible, so might be converted to many useful Purposes, if suffered to grow to a proper Size; but as they have been generally treated otherwise, the principal Uses it has been applied to, was for Turnery Ware, for which it is excellent Wood, also for making Mill Cogs, Heads of Beetles, &c. It is also excellent Fuel.

The Leaves of this Tree remain upon it, till the young Buds in the Spring thrust them off, so they afford much Shelter to Birds in Winter; and this renders them very proper to plant round the Borders of Plantations in exposed Situations, where they will defend the other Trees in Winter, and thereby greatly promote their Growth.

The Hop Hornbeam sheds its Leaves in Winter, with the Elm, and other deciduous Trees. This Tree, though but lately much known in England, is very common in Germany, growing promiscuously with the common Sort. It is also said to grow plentifully in North America, but it is doubtful whether that is not a different Sort from this. The Hop Hornbeam is of quicker Growth than the common Sort, but what the Wood of that will be I know not; for there are but few of the Trees in England growing upon their own Roots, most of them being grafted on the common Hornbeam, which is the usual Method of propagating them in the Nurseries; but the Trees so raised are of short Duration, for the Graft generally grows much faster than the Stock, so that in a few Years there is a great Disproportion in their Size; and where they happen to stand exposed to strong Winds, the Graft is frequently broken from the Stock, after many Years Growth; for which Reason, I would caution every Person not to purchase any of these Trees so propagated.

The Virginian flowering Hornbeam is still less common than the last, and only to be seen in curious Gardens; it is equally as hardy as the other, and may be increased by Layers. This Sort will grow to the Height of 30 Feet, or more, and is of quicker Growth than either of the former Sorts: It sheds its Leaves in Autumn, about the same Time with the Elm; and, during the Time of its Verdure, makes a good Appearance, being well clothed with Leaves, of a deep strong green Colour, resembling more the long leaved Elm than the Hornbeam.

The Eastern Hornbeam is a Tree of humble Growth, rarely rising above 10 or 12 Feet in this Country, shooting out many horizontal irregular Branches, so cannot easily be trained up to a Stem. The Leaves are much smaller than those of the common Hornbeam, and the Branches grow closer together, therefore may be very proper for low Hedges in Gardens; being a very tonfile Plant, and may be kept in less Compass than almost any other deciduous Tree. It is as hardy as any of the Sorts, and may be propagated in the same manner; but at present it is rare in the English Nurseries.

CARROTS. See Daucus.

CARTHAMUS. Lin. Gen. Plant. 838. Tourn. Infl. R. H. 457. Tab. 248. Bastard Saffron, or Safflower, in French Cartame, or Saffran Batard.

The Characters are,

It hath a Flower composed of several hermaphrodite Florets, in one common scaly Empalement. The Scales are composed of many flat Leaves, broad at their Base, ending in a Spine, and spread open below. The Florets are Funnel-shaped, of one Leaf cut into five equal Segments at the Top; these have five short hairy Stamina, terminated by cylindrical tubular Summits; in the Center is situated a short Germen supporting a slender Style the Length of the Stamina, crowned by a single Stigma. The Germen becomes a single, oblong, angular Seed, inclosed in the Empalement.

The Species are,

1. CARTHAMUS foliis ovatis integris serrato-aculeatis. Hort. Cliff. 394. Bastard Saffron with oval entire Leaves, which have spiny Serratures. This is the *Carthamus officinarum*, flore croceo. Tourn. Infl. Bastard Saffron of the Shops, with a Saffron coloured Flower.

2. CARTHAMUS caule piloso supernè lanato, foliis inferioribus pinnatifidis, summis amplexicaulibus dentatis. Hort. Upsal. 251. *Carthamus* with a hairy Stalk, woolly above, and having under Leaves which are indented; and the upper embracing the Stalk. This is the *Atractylis lutea*. C. B. P. Yellow Distaff Thistle.

3. CARTHAMUS caule glabro, foliis caulinis aculeatis, profundè dentatis, semiamplexicaulibus, capitulis ovatis. *Carthamus* with a smooth Stalk garnished with prickly Leaves, deeply indented and Half surrounding the Stalk, and oval Heads. *Cnicus Creticus Atractylidis folio & facie*, flore leucophæo. Tourn. *Cnicus* of Crete with a Leaf and Appearance of Distaff Thistle, and a whitish Flower.

4. CARTHAMUS foliis lanceolatis, acuminato-serratis. Hort. Cliff. 135. *Carthamus* with Spear-shaped Leaves sharply sawed. This is the *Cnicus perennis cæruleus Tingitanus*. H. L. 162. Blue perennial *Cnicus* of Tangier.

5. CARTHAMUS foliis caulinis linearibus pinnatis longitudine plantæ. Lin. Sp. 831. *Carthamus* with narrow winged Leaves on the Stalks, the Length of the Plant. This is the *Cnicus cæruleus humilis Montis Lupi*. H. L. Dwarf *Cnicus* of Mount Lupus with a blue Flower.

6. CARTHAMUS caule erecto piloso, foliis lanceolatis birsutis, capite maximo. *Carthamus* with an upright hairy Stalk, Spear-shaped hairy Leaves, and a very large Head. *Cnicus cæruleus asperior*. C. B. P. Rougher blue *Cnicus*.

7. CARTHAMUS foliis ensiformibus sinuato-dentatis. Prod. Leyd. *Carthamus* with Sword-shaped Leaves sinuated and indented. *Cnicus Hispanicus arborescens fetidissimus*. Tourn. Stinking shrubby *Cnicus* of Spain.

8. *CARTHAMUS foliis lineari-lanceolatis spinis marginalibus duplicibus, floribus solitariis terminalibus.* *Carthamus* with narrow Spear-shaped Leaves, double Spines on their Edges, and a single Flower terminating the Stalk. This is the *Carlina minima caulodes Hispanica*. *Barrel.* *Icon.* The least stalky Spanish Carline Thistle.

This 1st Sort grows naturally in *Egypt*, and some of the warm Parts of *Asia*. I have frequently received the Seeds from the *British* Islands in *America*, but whether they were originally carried thither, or grow naturally, I could never be rightly informed. It is at present cultivated in the *Levant* and many Parts of *Europe*, from whence great Quantities of Safflower are annually imported to *England*, for Dying and Painting.

This is an annual Plant, which rises with a stiff ligneous Stalk, two Feet and a Half, or three Feet high, dividing upward into many Branches, garnished with oval pointed Leaves, sitting close to the Branches: These are entire, and slightly sawed on their Edges, each Tooth being terminated by a short Spine. The Flowers grow single at the Extremity of each Branch: The Heads of Flowers are large, inclosed in a scaly Empalement, each Scale is broad at the Base, flat, and formed like a Leaf of the Plant, terminating in a sharp Spine. The lower Part of the Empalement spreads open, but the Scales above closely embrace the Florets, which stand out near an Inch above the Empalement; these are of a fine Saffron Colour, and this is the Part which is gathered for the Uses above mentioned. When the Florets decay, the Germen which is situated in each, become single, oblong, angular Seeds, of a white Colour, and have a pretty strong Shell or Cover to them. It flowers in *July* and *August*, and the Seeds ripen in Autumn, but if the Season proves cold and moist when the Plants are in flower, there will be no good Seeds produced; so that there are few Seasons wherein the Seeds come to Perfection in *England*.

The Seeds are sometimes used in Medicine, and accounted a pretty strong Cathartick, but at present they are seldom prescribed. It is propagated by Seeds, which should be sown in *April*, upon a Bed of light Earth: The best Way is to sow them in Drills, drawn at a Foot and a half Distance, in which the Seeds should be scattered thinly, for the Plants must not stand nearer each other, than a Foot in the Rows; but as some of the Seeds will fail, a greater Quantity should be sown, it will be easy to thin the Plants, when the Ground is hoed. If the Seeds are good, the Plants will appear in less than a Month; and in a Fortnight or three Weeks after, it will be proper to hoe the Ground, to destroy the Weeds, and the Plants should be thinned where they are too close, but at this Time they should not be separated to their full Distance, lest some of them should afterward fail; so that if they are now left six Inches asunder, there will be Room enough for the Plants to grow, till the next Time of Hoeing, when they must be thinned to the Distance they are to remain for good: After this they should have a third Hoeing, which, if carefully performed in dry Weather, will destroy the Weeds and make the Ground clean, so that the Plants will require no farther Care, till they come to flower; when, if the Safflower is intended for Use, the Florets should be cut off from the Flowers as they come to Per-

fection; but this must be performed, when they are perfectly dry, and then they should be dried in a Kiln, with a moderate Fire, in the same manner as the true Saffron, which will prepare the Commodity for Use.

But if the Plants are designed for Seed, the Flowers must not be gathered; for if the Florets are cut off, it will render the Seeds abortive though they may swell and grow to their usual Size, as I have frequently experienced, yet when they are broken, there will be found nothing more than a Shell, without any Kernel. This frequently happens in wet cold Seasons; though in very wet Years the Germen will rot, and never come so forward as to form a Shell.

I have been informed, that this Plant was formerly cultivated in the Fields in *England*, for the Dyers Use, and particularly in *Gloucestershire*, where the common People frequently gathered the Florets, and dried them, to put into their Puddings and Cheesecakes, to give them a Colour; but some by putting in too great a Quantity, gave their Puddings a Cathartick Quality.

If this Plant was ever cultivated here in great Quantity, it is surprising how it came to be so totally neglected, that at present there are not the least Traces in any Part of *England*, of its ever having been cultivated, and the Commodity is scarce known, except to those who deal in it; the Quantity which is annually consumed in *England* is so great, as to make a very considerable Article in Trade; so that it might be very well worthy of the publick Attention; for although the Seeds seldom come to Perfection in *England*, yet these might be annually procured from Abroad, and the Plants would constantly produce the Flower, which is the only Part useful: Or if this Plant was introduced to *Carolina*, it might be there cultivated to as great Advantage, as in any Part of the World; for there the Seeds will constantly ripen; and, as this Country is furnished with it from the *Mediterranean*, where there is great Danger of our Navigation being interrupted; so it should excite the Inhabitants of our *American* Colonies, to make Trial of as many of the Vegetables, as there is a Probability of succeeding there, and can be procured, which are of real Use in any of the Manufactures of this Country. The Seeds of this Plant may be easily procured from the *American* Islands, and in one Season, may be multiplied in so great Quantity, as to furnish a whole Province.

This Plant is cultivated in great Plenty, in some Parts of *Germany*, where the Seeds constantly come to Perfection; and as I have obtained a short Account of their Method of Cultivation, from a curious Gentleman of that Country, so I shall Insert it for the Benefit of those who may be induced to engage in this Undertaking.

The Ground in which they propose to sow the *Carthamus*, has always a double Fallow given to it, first to destroy the Weeds, and afterward to make it fine. They make Choice of their lightest Land, and such as is clear from Couch Grass, and other troublesome Weeds. After the Land has been fallowed a Summer and Winter, in which Time they give it four Ploughings, and harrow it between each, to break the Clods, and pulverise it; in the latter End of *March*, they give it the last Ploughing, when they lay it in narrow Furrows of about five Feet or a little more, leaving a Space of two Feet between each: Then they harrow these Lands to make them

them level, and after it is finished, they sow the Seeds in the following Manner. With a small Plough, they draw four shallow Furrows in each Land, at near a Foot and half Distance, into which they scatter the Seeds thinly; then with a Harrow, whose Teeth are little more than one Inch long, they draw the Earth into the Drills to cover the Seeds; after this, they draw a Roller over the Ground, to smooth and settle it. When the Plants are come up, so as to be distinguished, they hoe the Ground to destroy the Weeds; and at this first Operation, where the Plants happen to be close, they cut up the least promising, leaving them all single, at the Distance of three or four Inches; which they always suppose, will be sufficient Room for their Growth, till the second Time of Hoeing, which must be performed in about five Weeks after the first; in which they are guided by the Growth of the Weeds, for as this Work is performed with a *Dutch Hoe*, they never suffer the Weeds to grow to any Size, before they cut them; in which they judge right, for when the Weeds are small, one Man will hoe as much Ground in a Day, as can be performed by three, when they are permitted to grow large; and the Weeds will be more effectually destroyed.

They give a third Hoeing to the Plants, about 5 or 6 Weeks after the second; which generally makes the Ground sufficiently clean, till the *Carthamus* is pulled up. When the Plants begin to flower, and have thrust out their Florets (or Thrum) to a proper Length, they go over the Ground once a Week to gather it; and as it is from Time to Time gathered, it is dried in a Kiln for Use. There is usually a Succession of Flowers for 6 or 7 Weeks. After the Crop is gathered, the Stalks are pulled and tied in Bundles for Fuel, and when they have been set up a few Days to dry, they are carried off, and the Ground ploughed for Wheat; which they say, always succeeds well after this Plant.

The good Quality of this Commodity is chiefly in the Colour, which should be of a bright Saffron, and herein that which is cultivated in *England* often fails; for if there happens much Rain, during the Time the Plants are in flower, it will cause the Florets to change to a dark or dirty yellow, which will also befall that which is gathered when there is any Moisture remaining upon it; therefore great Care must be taken not to gather it till the Dew is quite dried off, nor should it be pressed together till it has been dried on the Kiln. The Manner of doing this being the same as for the true Saffron, I shall not mention it here, but desire the Reader to turn to the Article *Crocus*, where it is fully treated.

In *Spain* this Plant is cultivated in Gardens, as Marigolds in *England*, to put in their Soups, Olios, and other Dishes, to give them a Colour. The *Jews* also are very fond of this, and mix it in most of their Viands; it is very probable they were the Persons who first carried the Seeds to *America*, and taught the Inhabitants the Use of it, where it is now as commonly used by the *English*, as in any Part of *Europe*.

This Plant may be admitted to a Place in the Borders of large Gardens, where it will add to the Variety, during the Time of its Continuance in Flower, which is commonly two Months, or ten Weeks; for if the Seeds are sown the Beginning of *April*, the first Flowers will appear the Middle of *July* at farthest, and there will be a

Succession on the Side Branches, till the End of *September*, or in mild warm Seasons till the Middle of *October*, during which Time the bright Saffron coloured Flowers make a pretty Appearance; and if the Plants are supported to prevent their being broken, or blown down by the Wind, they will not interfere with other Flowers, because these have a regular upright Growth.

When they are cultivated for this Purpose, the Seeds should be sown in the Places where the Plants are designed to remain, because they do not bear transplanting well; therefore three or four Seeds should be sown in each Patch, lest any of them should fail, and when the Plants are grown so strong as to be out of Danger; the most promising in each Patch should be left, and the others pulled up, that they may not draw, or injure those which are to stand.

The 2d Sort grows naturally in the South of *France*, *Spain*, and *Italy*, where the Women use the Stalks for Distaffs, from whence it had the Title of Distaff Thistle. It is by some called Bastard wild Saffron. The Leaves are sometimes ordered for Medicine, and supposed to have the same Virtues as *Carduus Benedictus*.

This Plant is annual, perishing soon after the Seeds are ripe, the lower Leaves spread flat upon the Ground; these are five or six Inches long, narrow, and deeply indented on both Sides; they are hairy, and have a few soft Spines on their Edges; the Stalk rises about two Feet high, covered with Hairs, and garnished with oblong hairy Leaves, which embrace the Stalk with their Base, and are deeply sinuated, with sharp Thorns growing on their Edges. The upper Part of the Stalk divides into many Branches, garnished with Leaves of the same Form, but are smaller. The Flowers are produced at the End of the Branches, having a Cluster of stiff, hard, prickly Leaves below the scaly Empalement, which contains many yellow hermaphrodite Flowers, succeeded by oblong angular Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn. If the Seeds are sown in Autumn, the Plants will flower early the following Summer, so there will be a Certainty of good Seeds. They may be sown upon a Bed of Earth in any Situation, and will require no other Culture, but to keep them clean from Weeds, and thin the Plants where too close; this being medicinal, is kept in some Gardens, but it hath little Beauty.

There is a Variety of this, which grows much taller, the Heads larger, and the Leaves placed closer on the Stalks. This was found by *Tournefort* in the *Levant*.

The 3d Sort was also discovered by *Tournefort* in the Island of *Crete*, from whence he sent the Seeds to the Royal Garden at *Paris*. This differs from the former, in having a smooth Stalk, the Leaves are very stiff, deeply indented, smooth, and are armed with very strong Spines; the Heads of the Flowers are oval, the Florets white, and the Plant grows near four Feet high. This is an annual Plant, which may be sown and treated as the former, and flowers about the same Time.

The 4th Sort hath a perennial Root, but an annual Stalk. This grows naturally in *Spain*, and was first brought to *England* from *Tangier*; the Seeds are never perfected in *England*, so it is propagated by parting the Roots. The best Time for transplanting and parting them, is about the Beginning of *March*; they should have

have a dry Soil, and a warm Situation, otherwise they are liable to be destroyed in severe Winters. The Stalks of this rise about a Foot and a Half high, seldom putting out any Branches; they are garnished with narrow Spear-shaped Leaves, the whole Length of the Stalk; these are deeply sawed on their Edges, each of the Seratures ending in a sharp Point. The Stalk is terminated by one large scaly Head of blue Flowers, shaped like those of the other Species.

The 5th Sort grows naturally in the South of France, Spain, and Italy. This hath a perennial Root, and an annual Stalk, which rises about six Inches high, channeled, hairy, and garnished with long narrow Leaves, ending in several sharp Spines, and their Edges are indented, each Indenture ending in a Spine. Each Stalk is terminated by one large Head of blue Flowers, having a leafy Empalement, composed of very broad Scales, each ending in a sharp Spine. It flowers in June. This Sort is difficult to propagate in England, for the Roots do not put out Offsets like the former, so is only to be raised from Seeds, which do not come to Perfection here, unless the Season proves warm and dry. This should have a dry Soil, and warm Situation.

The 6th Sort is supposed by some, to be the same with the 4th, which is a great Mistake, for they are extremely different. This rises with a single Stalk, about 2 Feet high, of a purplish Colour, hairy, and channeled. This is pretty closely garnished with broad Spear-shaped Leaves, sharply sawed on their Edges, and covered with a short hairy Down. The Stalk is terminated by a single large Head of blue Flowers, having a scaly Empalement, composed of two Orders of Leaves, the outer being broad, long, and armed with sharp Spines on their Edges; the inner are narrow, and terminate with a sharp Thorn. It flowers in June and July, and the Seeds ripen in Autumn. This Sort may be propagated by parting their Roots, which should be performed in Autumn, when the Leaves decay. It should have a light dry Soil, in which it will endure the Cold of our Winters, and continue many Years. It may also be propagated by Seeds, which ripen well in dry Seasons, but in wet Summers the Seeds are generally abortive; this requires no Care but to keep it clean from Weeds. It grows naturally in Spain, France, and Italy, on arable Land.

The 7th Sort I received from Andalusia, where it grows naturally in great Plenty. This rises with a shrubby perennial Stalk, 8 or 10 Feet high dividing into many Branches; these are garnished with pretty long Sword-shaped Leaves, which are indented, armed with Spines on their Edges, and embrace the Stalks with their Base. The Branches are terminated by large, scaly, prickly Heads of yellow Flowers, which come out in July, but are never succeeded by Seeds here, so can only be propagated by Side Shoots, slipped from the Branches in Spring, and planted in Pots filled with light sandy Earth, and plunged into a moderate hot Bed, observing to shade them till they have taken Root; then they must be gradually hardened, and removed into the open Air, and when they have obtained Strength, they may be separated, and some of them planted in a warm dry Border, where they will endure the Cold of our ordinary Winters; but, in severe Frost, they are frequently destroyed, therefore a Plant or two should be kept in Pots,

and sheltered in Winter to preserve the Species.

The Seeds of the 8th Sort were sent me from Spain, where it grows naturally. This hath a perennial Root, but an annual Stalk, which is single, and never puts out any Side Branches; this is white, smooth, and channeled. The Leaves are long, narrow, of a pale green, and closely armed on their Edges with short stiff Spines, which come out double. The Stalks are terminated by single, oval, scaly Heads of white Flowers, each Scale being terminated by a purplish Spine. This squamous Empalement is closely joined at the Top, so as few of the hermaphrodite Florets appear visible above it; and this is guarded by a Border of long narrow prickly Leaves, surrounding the Head, which rise considerably above the Flowers. This Plant flowers in July and August, but seldom perfects Seeds in England. It should be planted in a light Soil, and a warm Situation, where it will live abroad in our ordinary Winters, but in severe Frost is sometimes destroyed. I could never propagate this Plant any other Way than by Seeds, which seldom ripen here.

CARUM. Lin. Gen. Plant. 327. Carui. Tourn. Inst. R. H. 306. Carui, or Caraway.

The Characters are,

It hath an umbellated Flower, composed of several small Umbels, which are formed as Rays to the general Umbel, neither of which have any Involucrum; the single Flowers have very small Empalements. The Flower hath 5 Heart-shaped Petals, obtuse, and turned inward at the Points; it hath 5 hairy Stamina, the Length of the Petals, terminated by roundish Summits. The Germen is situated under the Flowers, supporting 2 small Styles, crowned by a single Stigma. The Germen becomes an oblong channeled Fruit, dividing into 2 Parts, each having an oblong furrowed Seed.

The Species are,

1. CARUM foliis pinnatifidis planis, umbellulis inaequalibus confertis. Caraway with plain Leaves, ending with many Points, and unequal Umbels, growing close. This is the Cuminum pratense, Carui officinarum. C. B. P. 159. Meadow Cumin, or Common Caraway.

2. CARUM foliis capillaribus multifidis, umbellis laxis. Caraway with capillary multifid Leaves, and loose Umbels. This is the Carui Hispanicum, semine majore, & latiore. Juss. Spanish Caraway with a larger Seed.

The 1st Sort is the common Caraway, whose Seeds are greatly used, not only in Medicine, but also in the Kitchen, &c. This grows naturally in some rich Meadows in Lincolnshire and Yorkshire, and is sometimes found growing in the Pastures near London. It is also cultivated for Use in Essex, and some other Countries.

This is a biennial Plant, which rises from Seeds one Year, flowers the next, and perishes soon after the Seeds are ripe. It hath a taper Root like a Parsnip, but much smaller, which runs deep into the Ground, and hath a strong aromack Taste, sending out many small Fibres; from the Root arises one or two smooth, solid, channeled Stalks, about two Feet high, garnished with winged Leaves, having long naked Foot Stalks, and many small Wings placed by Pairs opposite on the Mid-rib, which are composed of many narrow, little, plain Leaves, ending in several Points. The Stalks divide upward into several smaller Branches, each of which is terminated by

an Umbel, composed 6 or 8 small separate Umbels, or Rays, which divide into several small Foot Stalks, each sustaining a single white Flower, with 5 Heart-shaped Petals; the Flowers of these small Umbels are closely joined together. After the Flowers are decayed, the Germen becomes an oblong channeled Fruit, composed of two oblong channeled Seeds, plain on one Side, but convex on the other. It flowers in June, and the Seeds ripen in Autumn.

The best Season for sowing the Seeds is in Autumn soon after they are ripe, when they will more certainly grow than those sown in Spring; and the Plants which rise in Autumn, generally flower the following Season, so that a Summer's Growth is saved. When the Plants come up, the Ground should be hoed to destroy the Weeds, and where the Plants are too close, they must be thinned as is practised for Carrots, leaving them 3 or 4 Inches a-part. The following Spring they will require to be twice more hoed, which will keep the Ground clean till the Seeds are ripe; then the Stalks must be pulled up, and tied in Bundles, setting them upright to dry, when the Seeds may be threshed out.

The 2d Sort grows naturally in Spain; the Seeds were sent me from the Royal Garden at Paris. This Plant rises with a stronger Stalk than the former, which seldom grows more than a Foot and Half high, but is closely garnished with fine narrow Leaves, like those of Dill; the Stalks divide upward into many Branches, each being terminated by loose Umbels, of white Flowers, succeeded by large broad Seeds, having the same aromatick Flavour as the common Sort. This is a biennial Plant, and may be treated as the former.

CARYOPHYLLATA. See Geum.

CARYOPHYLLUS. Lin. Gen. Plant. 594. *Caryophyllus aromaticus*. Tourn. The Clove Tree, or All-spice.

The Characters are,

It hath a double Empalement, that of the Flower is of one Leaf, cut into four obtuse Parts, upon which the Germen is situated; the Fruit hath another Empalement, which is small, and slightly divided into 4 Parts, which are permanent. The Flower hath 4 blunt Petals, situated opposite to the Incisures of the Empalement. It hath many Stamina, which rise from the Sides of the Empalement, terminated by roundish Summits. The Germen is situated under the Flower, and is crowned by the small Empalement, supporting a single upright Style, crowned by an obtuse Stigma. The Germen afterward becomes a soft Berry with two Cells, each containing a single Kidney-shaped Seed.

The Species are,

1. CARYOPHYLLUS foliis ovato-lanceolatis oppositis, floribus terminalibus, staminibus corollâ longioribus. The Clove Tree with oval Spear-shaped Leaves, growing opposite, and Flowers terminating the Stalks, whose Stamina are longer than the Petals. This is the *Caryophyllus aromaticus fructu oblongo*. C. B. P. 410. Aromatick Clove with an oblong Fruit.

2. CARYOPHYLLUS foliis lanceolatis oppositis, floribus racemosis terminalibus, & axillaribus. Clove Tree with Spear-shaped Leaves growing opposite, and Flowers growing in Bunches at the Ends of the Branches, and Wings of the Leaves. *Myrtus arborea aromatica foliis laurinis*. Sloan. Cat. 161. The Pimento, or All-Spice.

3. CARYOPHYLLUS foliis lanceolatis oppositis, floribus

geminatis alaribus. Brown. Hist. Jam. 248. Clove Tree with Spear-shaped Leaves placed opposite, and Flowers growing by Pairs from the Sides of the Stalks.

4. CARYOPHYLLUS foliis ovatis obtusis oppositis, floribus sparsis alaribus. Clove Tree with oval blunt Leaves placed opposite, and Flowers growing thinly from the Sides of the Branches. This is the *Myrtus cotini folio*. Plum. Cat. 19. Myrtle with a Leaf of Venice Sumach.

5. CARYOPHYLLUS foliis oblongo-ovatis, emarginatis, rigidis, glabris, floribus racemosis terminalibus. Clove Tree with oblong oval Leaves, which are stiff, smooth, and indented at the Edges, and Flowers growing in Bunches terminating the Stalk.

The 1st Sort grows naturally in the Moluccas, and the hottest Parts of the World, where it rises to the Height of a common Apple Tree; but the Trunk generally divides at about 4 or 5 Feet from the Ground, into 3 or 4 large Limbs, which grow erect, and are covered with a thin smooth Bark, which adheres closely to the Wood. These Limbs divide into many small Branches, which form a Sort of conical Figure; the Leaves are like those of the Bay Tree, and are placed opposite on the Branches. The Flowers are produced in loose Bunches at the End of the Branches; they are small, white, and have a great Number of Stamina, much longer than the Petals. The Flowers are succeeded by oval Berries, crowned with the Empalement, divided into four Parts, which spread flat on the top of the Fruit, in which Form they are brought to Europe, for it is the young Fruit beaten from the Trees before they are half grown, which are the Cloves used all over Europe.

I have not heard of any Plants of this Kind being in the Gardens, either in England or Holland, but I chose to mention it here, to introduce the other.

The 2d Sort grows naturally in Jamaica, but particularly on the north Side of that Island, where it is found in great Plenty, and is a considerable Branch of their Trade; the unripe Fruit dried, being the All-spice so well known in Europe. It is now cultivated with Care, in many Plantations, for the Trees will thrive upon shallow rocky Land, which is unfit for the Sugar Cane, so that great Advantage arises to the Planters, from Lands which would otherwise be of small account.

This Tree grows to the Height of 30 Feet or more, with a strait Trunk, covered with smooth brown Bark, and divides upwards into many Branches which come out by Pairs opposite; these are garnished with oblong Leaves, resembling those of the Bay Tree, both in Form, Colour, and Texture, and are placed by Pairs opposite; when these are bruised, or broken, they have a very fine aromatick Odour, like that of the Fruit. The Branches grow very regular, so that the Trees make a fine Appearance, and as they retain their Leaves through the Year, are worthy of being propagated for Ornament and Shade about the Habitations of the Planters. The Flowers are produced in large loose Bunches from the Side of the Branches, toward their Ends, and each Branch is also terminated by a larger Bunch than the other; the Flowers are small, and of an herbaceous Colour, they are male and female, upon distinct Trees. The male Flowers have very small Petals; and a great Number of Stamina in each, which are of the same Colour with the Petals, and are terminated by oval bifid Summits;

Summits; the female Flowers have no Stamina, but an oval Germen, situated below the Flower, supporting a slender Style, with a blunt Stigma at the Top. The Germen afterward becomes a globular pulpy Berry, including two Kidney-shaped Seeds. The usual Season when these Trees flower, is in *June, July, and August.*

When the Fruit are designed for Use, they are gathered, or beaten down from the Trees, a little before they arrive to their full Size, and are separated from Leaves, Stalks, or any Rubbish which may have accidentally mixed with them, then they are exposed every day to the Sun, spread on Cloths, for ten or twelve Days to dry, but removed under Cover every Evening to screen them from the Dews; when perfectly dry, they are packed up for Exportation. If the Fruit is permitted to grow to Maturity, the Pulp, which surrounds the Seeds, is so full of Moisture, and so glutinous as to stick to the Fingers of those who bruise them, therefore are unfit for those Uses, to which the dried Fruit are applied.

It is called by some *Jamaica Pepper*, but the most general Appellation is *All-spice*, from its Relish and Flavour, partaking of many Spices; and is deservedly accounted one of the best, and if it was as scarce and difficult to procure, as the Spices of the East, would be much more sought after and esteemed. The *Dutch*, who have engrossed the Spice Trade to themselves, have been artful enough to deceive us with this of our Production, by purchasing the dried Fruit of the All-spice in *England*, at a low Price, and grinding it to a Powder, then selling it to us at an advanced Price, for Powder of Cloves. This I have been credibly informed of, by an eminent Merchant, through whose Hands great Quantities of this Commodity has passed.

As there is so great an Affinity between this Tree, and the true Clove, so it might be worthy of Trial, if the Fruit when first formed, or the Flowers dried in the same Manner as the Eastern Cloves, might not answer the same Purpose; or, at least, it would be a good Succedaneum for that Spice, and as it is the Production of our own Colonies, should have proper Encouragement.

This Tree is propagated by Seeds, which in the natural Place of its Growth is conveyed, and sown by Birds, to a great Distance; and, it is very probable, the Seeds passing through them, are rendered fitter for Vegetation, than those which are immediately gathered from the Tree, for I have received great Quantities of the Berries, which were perfectly ripe and fresh, great Part of which I sowed in different Ways, and communicated some of them to several curious Persons, who did the same, but none of them have yet succeeded, and upon informing my Friend Mr. *Williams* of this, he told me that a Friend of his, whose Plantation was on the South Side of *Jamaica*, desired him to save a large Quantity of the ripe Berries, for him to sow on his Plantation, which he accordingly did, but his Friend forgot to send for them, till near two Years after, during which Time, they had lain in a large Heap, and had fermented, and on sowing those Berries, the Plants came up with the first Rains in great Abundance; so that it may be of great Service to these Seeds; either to pass through animal Bodies, or to be fermented before they are sown.

The Plants cannot be preserved in *England*, unless placed in a Stove during the Winter Season, but they

will thrive in a moderate Degree of Warmth; they should be planted in a soft loamy Soil, and, in Winter, must have but little Water; in the Summer they should have a large share of Air, and in *July*, if the Season proves warm, they may be placed in the open Air, in a warm sheltered Situation, but upon the Approach of cold Nights, they must be removed into the Stove again. The exposing these Plants to the open Air, for one Month only, will be of great Service to clean their Leaves from Insects, or Filth, which they are subject to contract, by remaining long in the Stove; but if the Season should prove very wet or cold, it will not be safe to trust these Plants long abroad; therefore their Leaves should be now and then washed with a Sponge to clean them, which will not only render them more lightly, but also promote their Growth. I have made several Trials to propagate this Tree by Layers and Cuttings, but without Success; nor have I heard of any other Person who has succeeded in the same Trials; which inclines me to believe, they can be no other way propagated, but by Seeds; and the rather because many Trees in the same Country, are propagated there by Cuttings, or Branches, which, being planted in their rainy Seasons, generally succeed; but I have not heard of this Tree being propagated there by any other Method than from Seeds. This Plant, being an Ever-green, makes a fine Appearance in the Stove at all Seasons of the Year, and their Leaves having such an agreeable Fragrance when rubbed, render them as worthy of a Place in the Stove, as any other exotick Plant, which is preserved for Ornament.

The 3d Sort grows naturally in *Jamaica*, from whence I received it some Years past. This rises with a divided Trunk, to the Height of 18 or 20 Feet, sending out many Branches placed opposite and covered with a gray Bark: The Leaves come out by Pairs opposite, which are shorter, and rounder at their Points, than those of the last Species; they are also smoother, and of a firmer Texture. The Flowers come out from the Side of the Branches, between the Leaves, upon slender Foot Stalks; about an Inch in Length, two generally arising from the same Point: These are succeeded by round Berries, of a brighter Colour than those of the former, having the Empelement on their Crowns. The Leaves and Fruit of this Sort have no Aromatick Flavour, so are not of Use, but the Characters of the Flower and Fruit, are the same as the other Sort.

This Tree retains its Leaves all the Year, which being of a splendid green, make a very good Appearance, when intermixed with other exoticks in the Stove; but the Flowers being small, and growing thinly on the Branches, make no great Figure, so it is only preserved for the Beauty of its Foliage. It is propagated by Seeds, and treated as the other Sort.

The 4th Sort was sent me from *Carthagena* in *New Spain*: This rises with many irregular Stems, about 12 or 14 Feet high, which are covered with an Ash coloured Bark, and divide into many Branches upward: These are garnished with stiff oval Leaves, placed opposite. The Flowers are produced from the Side of the Branches, sometimes 4, 5, or 6 Foot Stalks arise from the same Point; at other Times, they come out single, or perhaps by Pairs: These are white, and of the same Shape with those of the 2d Sort, and are succeeded by Berries

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ries which are rounder, and, for the most part, contain but one Kidney-shaped Seed.

This Sort agrees with the 2d in its general Characters, but not in the Virtues, for it hath none of the Aromatick Flavour, with which that abounds; but as it retains its Leaves through the Year, so may merit a Place in the Stove, better than many other Plants which are preserved by the Curious. This is propagated by Seeds, in the same Way as the 2d Sort, and the Plants are treated in the same Manner.

The 5th Sort was sent me from the Island of *Berbuda*, where it rises to the Height of 20 Feet: The Trunk and Branches are covered with a smooth brown Bark. The Branches come out by Pairs opposite; these grow erect, and are garnished with very stiff, smooth, lucid Leaves, placed by Pairs opposite, and have very short Foot Stalks. The Leaves vary much in their Form, some are oval, others oblong, and some indented so deeply at their Ends, as to be almost Heart-shaped. Their Consistence is much thicker than those of the common Laurel, and their Colour a splendid green, with one deep Mid-rib running through the Middle, and many small Veins going from thence transversely to their Border. The Flowers are produced in small loose Bunches, at the Extremity of the Branches, which have several narrow Leaves, intermixed with the Bunches. The Flowers are succeeded by Berries of the same Shape with those of the 2d Sort, but larger.

This Tree is propagated by Seeds as the other Species; and deserves a Place in the Stove, for the Beauty of its ever-green Leaves, which being of a thick Consistence and shining green Colour, make a fine Appearance in the Stove, at all Seasons of the Year; but this hath no aromatick Flavour to recommend it, as hath the 2d Sort, for which Reason it is seldom noticed. I take this to be the Bay Tree, mentioned by *Hughes*, in the History of *Barbadoes*, which he describes to have no Flavour; for I have seen Plants of this Sort which were brought from thence, so I suppose it grows naturally there.

As these Plants do not rise from Seeds in *England*, the best way to obtain them, is to get some Person of Skill in *America*, to take up a Number of young Plants, and plant them close in Boxes of Earth, setting them in the Shade till they have taken new Root; then remove them into an open Situation, where they may have Time to establish their Roots before they are shipped for *England*; in their Passage they must be guarded from the Spray of the Sea, and salt Water, and should have very little Water given them; for most of the Plants sent to *England*, are killed in their Passage by having too much Wet. If these Directions are observed, the Plants may be brought in good Health, provided they come over any Time in Summer, that they may have Time to get fresh Root before the cold Season begins; and when once they are well established in their Roots here, they may be preserved many Years in Vigour; but I have not seen any of the Plants in flower here as yet.

CASSIA. See *Osyris*.

CASSIA. *Lin. Gen. Plant.* 461. *Tourn. Inst. R. H.* 619. *Senna spuria*. *Hoult. Mss.* Cassia or Wild Senna.

The Characters are,

The Embælement is composed of five concave, coloured Leaves; the Flower hath five roundish concave Petals,

which spread open; it hath ten declining Stamina, three of the lower are long, the three upper are shorter; the Summits of the three lower are large, arched, beaked, and separated at their Points; the three upper Stamina have very small Summits; the four Side Stamina have no Beaks, but spread from the other. In the Center is situated a long taper Germen, having a short Style, terminated by an obtuse Stigma. The Germen becomes a long Pod, divided by transverse Partitions, each containing one or two roundish Seeds, fastened to the Margin of the upper Valve.

The Species are,

1. CASSIA foliolis quinquejugatis, ovato-lanceolatis, marginibus scabris, exterioribus majoribus, glandulâ basos petiolorum. *L. S. P.* 377. Cassia with Leaves composed of five Pair of oval Spear-shaped Lobes with rough Borders, the upper Lobes being the largest, and a small Gland at the Base of the Foot Stalk. *Senna occidentalis, odore opii viroso, orobi Pannonici foliis mucronatis glabris. Hort. Amsl.* Western Senna smelling like Opium, with smooth pointed Leaves like the Pannonian bitter Vetch.

2. CASSIA foliolis quinquejugatis ovatis glabris, exterioribus longioribus, caule fruticoso. Cassia with Leaves composed of five Pair of smooth, oval Lobes, the upper being the longest, and a shrubby Stalk. This is the *Senna spuria Americana frutescens, foliis mucronatis minoribus, siliquis teretibus, duplici seminum ordine factis. Hoult. Mss.* Shrubby American bastard Senna, with small pointed Leaves, and taper Pods having two Rows of Seeds.

3. CASSIA foliolis octojugatis, ovali-oblongis, interioribus minoribus, petiolis eglandulosis stipulis patulis. *Hort. Cliff.* 158. Cassia with 8 Pair of oblong, oval, little Leaves, the inner being the least, Foot Stalks without Glands, and a spreading Stipula. This is the *Cassia sylvestris fœtida, siliquis alatis. Plum. Cat.* 18. Wild stinking Cassia with winged Pods.

4. CASSIA foliolis trijugatis, oblongo ovatis æqualibus villosis, siliquis articulatis, caule erecto arboreo. Cassia with 3 Pair of oblong, oval, hairy Leaves, which are equal, jointed Pods, and an upright woody Stem. This is the *Senna spuria arborea, villosa, foliis latis mucronatis, siliquis articulatis. Hoult. Mss.* Hairy Tree, bastard Senna with broad pointed Leaves, and jointed Pods.

5. CASSIA foliolis trijugatis, ovato-acuminatis, villosis, floribus solitariis axillaribus, siliquis erectis. Cassia with 3 Pair of Lobes in each Leaf, which are oval, pointed, and hairy, single Flowers proceeding from the Sides of the Stalks, and upright Pods. This is the *Senna spuria herbacea orobi Pannonici foliis rotundioribus, flore parvo, siliquis erectis. Hoult. Mss.* Herbaceous bastard Senna with rounder bitter vetch Leaves, a small Flower, and upright Pods.

6. CASSIA foliolis novemjugatis oblongis, glabris, æqualibus, floribus axillaribus. Cassia with small Leaves, composed of 9 Pair of Lobes, which are oblong, smooth, and equal, and Flowers proceeding from the Sides of the Stalks. *Cassia Marylandica pinnis foliorum oblongis, calyce floribus reflexo. Mart. Cent.* Cassia of Maryland with oblong Pinnæ, and a reflexed Flower Cup.

7. CASSIA foliolis trijugatis obovatis glabris, interioribus rotundioribus minoribus, glandulâ interjectâ globosâ. *Hort. Cliff.* 159. Cassia with 3 Pair of oval smooth Leaves, the inner ones being rounder and smaller, and a globular Gland placed between the Leaves. This is

the *Cassia hexaphylla* siliqua bicapsulari. *Plum. Cat.* 18. Six leaved *Cassia* with a Pod having two Cells.

8. *CASSIA foliolis quinquejugatis, ovato-lanceolatis glabris, petiolis eglandulosis. Flor. Zeyl.* 149. *Cassia* with 5 Pair of Leaves, which are oval, Spear-shaped, and smooth, and Foot Stalks having no Glands. This is the *Cassia fistula Alexandrina*. *C. B. P.* 405. The purging *Cassia* of *Alexandria*, or Pudding Pipe Tree.

9. *CASSIA foliolis sexjugatis, lanceolatis, glabris, interioribus minoribus, floribus terminatricibus. Cassia* with 6 Pair of Leaves, which are smooth and Spear-shaped, the inner ones being smaller, and Flowers terminating the Stalk. This is the *Cassia Babamensis*, pinnis foliorum mucronatis angustis; calyce floribus non reflexo. *Martyn. Cent.* 1. p. 21. *Babama Cassia* with narrow pointed Wings to the Leaves, and the Flower Cup not reflexed.

10. *CASSIA foliolis bijugatis, ovato-lanceolatis, glabris, floribus terminalibus, siliquis longis teretibus, caule fruticoso. Cassia* with 2 Pair of Leaves which are oval, Spear-shaped, and smooth, Flowers terminating the Stalks, long, taper Pods, and a shrubby Stalk. This is the *Cassia fruticosa tetraphylla*, siliquis erectis. *Houft. Mss.* Shrubby four leaved *Cassia* with upright Pods.

11. *CASSIA foliolis duodecemjugatis, oblongis, obtusis, glabris, glandula nulla. Lin. Sp. Plant.* 379. *Cassia* with 12 Pair of Leaves, which are oblong, blunt, and smooth, and have no Glands. This is the *Cassia fistula Brasiliensis*. *C. B. P.* 403. Purging *Cassia* of *Brasil*, commonly called Horse *Cassia* in *America*.

12. *CASSIA foliolis septemjugatis, oblongo-ovatis, obtusis, floribus spicatis axillaribus, siliquis recurvis. Cassia* with 7 Pair of Leaves, which are oblong, oval and blunt, Spikes of Flowers proceeding from the Sides of the Stalks, and recurved Pods. This is the *Senna folioligustri*. *Plum. Cat.* 18. *Senna* with a privet Leaf.

13. *CASSIA foliolis trijugatis, obtusis, emarginatis, caulibus pilosis, floribus solitariis axillaribus petiolis longioribus. Cassia* with 3 Pair of obtuse Leaves, indented at the Top, hairy Stalks, Flowers growing singly from the Sides of the Stalks, and a long Foot Stalk. *Senna spuria frutescens, foliorum pinnis latioribus, caulibus pilosis, siliquis longissimis pediculis insidentibus.* Shrubby bastard *Senna* with broader Wings to the Leaves, hairy Stalks, and very long Pods standing upon Foot Stalks.

14. *CASSIA foliolis quadrijugatis oblongo-ovatis, caulibus procumbentibus, floribus axillaribus pedunculis bifloris. Cassia* with 4 Pair of oval, oblong Leaves, trailing Stalks, and Flowers proceeding from the Sides of the Stalks, two growing upon each Foot Stalk. *Senna spuria minima, procumbens, foliorum pinnis subrotundis, caule pubescente. Houft.* The least trailing bastard *Senna* with roundish Wings to their Leaves, and a hairy Stalk.

15. *CASSIA foliolis bijugatis oblongo-ovatis, subtus villosis, floribus corymboseis, caule erecto arboreo. Cassia* with two Pair of oblong, oval Leaves, hairy on their under Side, Flowers growing in round Bunches, and an erect Tree-like Stem. This is the *Senna spuria tetraphylla arborea*, siliquis compressis, angustis, longissimis, pendulis. *Houft. Mss.* Four leaved Tree bastard *Senna*, with very long, narrow, flat, hanging Pods.

16. *CASSIA foliolis multijugatis linearibus, floribus solitariis axillaribus, pedunculis longissimis. Cassia* with many Pair of narrow Leaves, single Flowers proceeding from

the Sides of the Stalks, and very long Foot Stalks. This is the *Senna occidentalis*, foliis herbe mimosæ, siliqua singulari, floribus pediculis longioribus insidentibus. *Sloan. Hist. Jam.* 2. 51. Occidental bastard *Senna* with Leaves like the sensitive Plant, single Pods, and Flowers sitting upon longer Foot Stalks.

17. *CASSIA foliolis multijugatis linearibus, caulibus procumbentibus, frutescentibus, floribus maximis solitariis axillaribus, siliquis glabris. Cassia* with many Pair of small Leaves, which are narrow; shrubby trailing Stalks, large Flowers growing singly from the Sides of the Stalks, and smooth Pods. This is the *Senna spuria mimosæ foliis, frutescens & procumbens, flore maximo, siliquis glabris. Houft. Mss.* Shrubby, trailing, bastard *Senna*, with Leaves like those of the sensitive Plant, a very large Flower, and smooth Pods.

18. *CASSIA foliolis trijugatis ovatis, exterioribus majoribus glandula subulatâ inter inferiora. Prod. Leyd.* 46. *Cassia* with 3 Pair of small oval Leaves, the upper being the largest, and an Awl-shaped Glandule between the lower Pair. This is the *Senna spuria plerumque hexaphylla siliqua pentagonâ alata. Houft. Mss.* Bastard *Senna* with Leaves for the most Part having six Lobes, and a five cornered winged Pod.

19. *CASSIA foliolis quinquejugatis, lanceolatis rigidis floribus racemosis axillaribus, siliquis planis, caule fruticoso. Cassia* with 5 Pair of Spear-shaped stiff Leaves, Flowers growing in Bunches from the Sides of the Stalk, flat Pods and a shrubby Stalk.

20. *CASSIA foliolis bijugatis ovatis, caulibus procumbentibus, floribus solitariis axillaribus, siliquis birsutis. Cassia* with 2 Pair of small oval Leaves, trailing Stalks, single Flowers proceeding from the Sides of the Stalk, and hairy Pods. This is the *Senna spuria tetraphylla herbacea procumbens, siliquis birsutis. Houft. Mss.* Trailing four leaved, herbaceous bastard *Senna* with hairy Pods.

21. *CASSIA foliolis multijugatis, glandula petioli pedicellatâ, stipulis ensiformibus. Hort. Upsal. Cassia* with many Pair of Leaves, and the Gland on the Foot Stalk resembling an Insect, and Sword-shaped Stipule. *Chamaecrista pavonis Americana, siliqua multiplici. Breyn. Cent.* 64. Dwarf *American Flower-fence* with many Pods.

The 1st Sort grows naturally in the Islands in the *West Indies*, where it is called Stinking Weed, from its unfavoury Odour. This rises with a channeled Stalk 3 Feet high, dividing into several Branches, garnished with winged Leaves placed alternately; each of these is composed of 5 Pair of Lobes (or small Leaves) which are oval, Spear-shaped, sitting close to the Mid-rib, and have rough Edges, the lower Pair of Lobes being the smallest, the others enlarge to the Top, which are the biggest; at the Base of the Foot Stalk, is produced a small Protuberance which is called a Gland; this is differently situated in the several Species of this Genus. The Flowers come out from the Side of the Stalks, two growing upon each Foot Stalk, but the Branches are terminated by loose Spikes of Flowers, which are composed of five concave yellow Petals, with ten declining Stamina, situated round the Germen and Style, which becomes a Sword-shaped flat Pod, having a Border on each Side, and is indented between each Seed.

This is a biennial Plant, which propagates by Seed in Plenty, in the Countries where it grows naturally; but

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but in *England*, the Seeds must be sown on a hot Bed in Spring, and when the Plants are fit to remove, they should be each planted in a separate Pot, fill'd with light Earth, and plung'd into a moderate hot Bed, where they should be shaded till they have taken fresh Root; after which they should have fresh Air admitted to them every Day, in Proportion to the Warmth of the Season; and require to be frequently watered: When the Plants have fill'd the Pots with their Roots, they should be shifted into larger, and if too tall to remain in the hot Bed, they must be placed in the Stove, or a Glass Case, where they may be defended from Cold, but in warm Weather have Plenty of Air. With this Management the Plants will flower in *August*, and perfect Seeds in *October*, but may be preserved through the Winter in a Stove, where they will continue flowering a long Time. In warm Summers the Plants may be placed in the open Air toward the latter end of *June*, where they will flower very well, but these will not perfect Seeds unless they are removed into the Stove in Autumn.

The 2d Sort was sent me from *Jamaica* by the late Dr. *Houfoun*, who found it growing there naturally. This rises with a shrubby Stalk 5 or 6 Feet high, sending out many Branches toward the Top, garnished with winged Leaves, composed of five Pair of small oval Leaves, the upper ones being longest. The Flowers come out from the Sides of the Stalks, and also terminate the Branches in loose Spikes; these are yellow, and shaped like those of the former, but are smaller; the Pods are long, taper, and contain two Rows of Seeds.

This Plant may be preserved 3 or 4 Years in the Stove, and will annually flower and perfect Seeds. It is propagated by Seeds, which should be sown on a hot Bed in Spring, and the Plants must be treated as the former Sort, with only this Difference, that these when they are too tall to remain longer under the Frames on the hot Bed, must be removed into the Stove, where they will often flower in Autumn or Winter; but they seldom perfect their Seeds till the second Year.

The 3d Sort hath an herbaceous Stalk, 5 or 6 Feet high, garnished on every Side with long winged Leaves, composed of 8 or 10 Pair of large oval Lobes, each being more than 3 Inches long, and one broad; these are rounded at the End, where they are slightly indented. The Flowers are produced in loose Spikes at the Top of the Stalk, which are large, yellow, and of the same Shape with those of the other Species; the Pods are long, taper, and have 4 Borders or Wings running longitudinally; these contain a double Row of angular Seeds. The whole Plant hath a strong fetid Odour.

This Sort seldom continues more than two Years; it must be raised from Seeds as the former Sorts, and placed in the Tan Bed in the Stove, being very tender, and should have but little Water in Winter: The 2d Year the Plants will flower, but very rarely produces Seeds in *England*.

The 4th Sort was sent me from *Campeachy*, by the late Dr. *Houfoun*, who found it growing there in great Plenty. This rises with a woody Stem, to the Height of 14 or 16 Feet, sending out many lateral Branches, garnished with winged Leaves, composed of 3 Pair of oblong, oval, hairy Lobes, of equal Size; the Flowers come out in loose Bunches at the End of the Branches, of a pale

Straw Colour, and small, but shaped like the others; the Pods are long, narrow, and jointed; the Seeds are oval and brown.

This may be propagated by Seeds, which must be sown upon a hot Bed, and the Plants treated as the former Sorts, placing them in a warm Stove, where they will continue several Years, producing their Flowers in Summer, and in warm Seasons the Seeds will ripen.

The 5th Sort is a low herbaceous Plant, seldom rising a Foot high; the Stalk is single, and garnished with winged Leaves, composed of 3 Pair of oval, pointed Lobes, which are hairy; the Flowers come out single from the Side of the Stalks, of a pale yellow, and small; these are succeeded by narrow taper Pods two Inches long, which grow upright. This Plant is annual; the Seeds must be sown on a hot Bed, and the Plants treated as the first Sort: They flower in *July*, and ripen Seeds in Autumn. This was sent me from *Campeachy*.

The 6th Sort grows naturally in *Maryland*, from whence I received the Seeds. It hath a perennial Root, composed of a great Number of black Fibres; this sends out several upright Stalks in Spring, which rise about two Feet high, garnished with winged Leaves composed of nine Pair of oblong smooth Lobes, which are equal; toward the upper Part of the Stalks the Flowers come out from the Wings of the Leaves, two or three together; but the Stalks are terminated by loose Spikes of pale yellow Flowers, which are rarely succeeded by Pods in *England*. The Stalks decay in Autumn, and rise again in Spring. The Roots continue many Years, and will live abroad in a warm Border and a dry Soil. The Seeds come up in the full Ground if sown in *April*, and in Autumn they may be planted into the Borders where they are designed to remain.

The 7th Sort is an annual Plant, which rises a Foot and half high, with an erect herbaceous Stalk, garnished with winged Leaves, composed of 3 Pair of oval Lobes; the Flowers come out singly from the Wings of the Leaves, they are small, yellow, and shaped as those of the other Species; these are succeeded by taper Pods, having Cells containing two Rows of Seeds. It grows naturally in *Jamaica*, and the other Sugar Islands.

This is propagated by Seeds sown on a hot Bed in Spring, and the Plants treated as hath been directed for the first Sort. They flower in *July*, and the Seeds ripen in *October*, when the Plants will decay.

The 8th Sort is the Tree which produces the purging *Cassia* used in Medicine. It grows naturally in *Alexandria*, and in both *Indies*, where it rises to the Height of 40 or 50 Feet, with a large Trunk, dividing into many Branches, garnished with winged Leaves, composed of five Pair of spear-shaped Lobes, which are smooth, having many transverse Nerves from the Mid-rib to the Borders; the Mid-rib is very prominent on the under Side; the Flowers are produced in long Spikes at the End of the Branches, each standing upon a pretty long Foot Stalk; These are composed of five large concave Petals, of a deep yellow Colour, and are succeeded by round Pods, from one, to two Feet long, with a dark brown woody Shell, having a longitudinal Seam on one Side, and divided into many Cells by transverse Partitions, each containing 1 or 2 oval, smooth, compressed Seeds, lodged

in a sweetish black Pulp, which is the Part used in Medicine.

This Tree is propagated by Seeds, which may be easily procured from the Druggists who import the Pods for Use; these must be sown on a hot Bed in Spring, and when the Plants come up, they must be treated as the first Sort, during the first Summer; and in Autumn they must be removed into a Stove, and plunged in the Tan Bed; during the Winter they should have very little Water; for as these Trees grow naturally in dry sandy Land, Moisture is a great Enemy to them, but especially during that Season. In Summer they should have a good Share of Air in warm Weather, but they will not thrive in the open Air in this Country, at the warmest Time of the Year, so should constantly remain in the Stove. With proper Care these Plants will grow 8 or 10 Feet and produce Flowers; when they make a fine Appearance.

The 9th Sort grows naturally in the *Bahama Islands*, from whence I received the Seeds. This is an annual Plant, which rises with an upright Stalk, two Feet and a Half high, garnished with winged Leaves, composed of six Pair of Lobes, which are smooth, narrow, and Spear-shaped, standing at wide Distances: The Flowers are collected into loose Bunches at the Top of the Stalks, of a pale yellow, and are succeeded by long compressed Pods. It flowers in *July*, and the Seeds ripen in Autumn. This must be treated as the first Sort.

The 10th Sort was sent me from *La Vera Cruz*, in *New Spain*, by the late *Dr. Houstoun*. This grows upward of 20 Feet high, with several Trunks covered with brown Bark; these divide into many Branches upward, garnished with winged Leaves, composed of two Pair of Lobes, which, in the lower Leaves, are oval, but those of the upper are five Inches long, and two and a half broad in the Middle, smooth, and of a light green. The Flowers are produced in loose Spikes at the Extremity of the Branches, which are large, and of a Gold Colour; these are succeeded by taper brown Pods, about 9 Inches long, and have many transverse Partitions, in which the Seeds are lodged in a thin Pulp.

This Sort is propagated by Seeds sown on a hot Bed, and the Plants treated as the 8th Sort; for the Plants will not live in the open Ground in the warmest Season of the Year; but if properly managed in the Stove, will produce their beautiful Flowers in 3 or 4 Years from the Seed.

The 11th Sort grows in Plenty in the Islands of the *West-Indies*. This rises to a great Magnitude, with a large Trunk, dividing into many Branches, garnished with very long winged Leaves, composed of 12 or 14 Pair of oblong blunt Lobes, which are smooth, of a light green, and placed near together. The Flowers come out in loose Spikes at the End of the Branches, of a pale Carnation Colour, shaped like those of the other Species; these are succeeded by large roundish Pods, divided by transverse Partitions into many Cells, in which the Seeds are lodged, surrounded with a black purging Pulp. This is called *Horfe Cassia*, because it is generally given to Horses.

It is propagated by Seeds, which should be sown, and the Plants treated as the 8th Sort, with which Management they will thrive and produce Flowers in *England*.

The 12th Sort was sent me from the *Havannab*. This hath an herbaceous Stalk, which divides into many Parts, rising about 3 Feet high, and is garnished with winged Leaves, composed of 7 Pair of oblong oval Lobes, which are rounded at the End. The Flowers come out from the Side of the Branches, upon very long Foot Stalks, and are disposed in loose Spikes; these are of a pale yellow, and are succeeded by recurved Pods, containing one Row of compressed Seeds.

This is a biennial Plant, which, if brought forward early in the Spring, will sometimes perfect Seeds the same Year; but if they should fail, the Plants may be kept through the Winter in a Stove, as the first Sort, and good Seeds may be obtained the following Season.

The 13th Sort rises with several weak shrubby Stalks, about two Feet high, which are closely garnished with winged Leaves, composed of 3 Pair of Lobes, very narrow at their Base, enlarging to the Top where they are blunt, and rounded with a little Indenture at the Point; these contract closely every Evening, after the Sun has left them. The Flowers come out single from the Side of the Branches, standing upon very long Foot Stalks; these are of a bright yellow, shaped like those of the other Species, and succeeded by narrow flat Pods, an Inch and a Half long. This grows plentifully in *Jamaica*. It is propagated by Seeds, sown on a hot Bed, and managed as the other tender Sorts; it will continue 2 or 3 Years, if placed in a warm Stove.

The 14th Sort sends out from the Root, 2 or 3 slender Stalks, which trail on the Ground, and are garnished with winged Leaves, having 4 Pair of small roundish Lobes, of a pale green; at the Insertion of the Foot Stalks arise those of the Flower, which is jointed, dividing into two shorter at the Top, sustaining 2 small yellow Flowers. This grows naturally in *Jamaica*, from whence the Seeds were sent me. It is an annual Plant, whose Seeds must be sown early in the Spring on a hot Bed, and treated like the other Kinds, but as the Branches of this grow near the Ground, the Plants may remain under a Frame all the Summer, and will flower in *July*, when, if the Season is warm, they must have a large Share of Air, otherwise the Flowers will fall off, without being succeeded by Pods; but if rightly managed, the Seeds will ripen in Autumn.

The 15th Sort was sent me from *La Vera Cruz*. This rises with a strong upright Trunk, to the Height of 25 or 30 Feet, dividing into many Branches, covered with an Ash-coloured Bark, and garnished with winged Leaves, having long Foot Stalks, each being composed of 2 Pair of oblong oval Lobes, 4 Inches long, and near 2 broad, which are smooth, of a dark green on their upper Side, but paler underneath. The Flowers are produced sometimes from the Side of the Stalks, where they are few and scattering, but the Ends of the Branches have large round Bunches of Flowers, which branch out from one Center; they are of a deep yellow, inclining to an Orange Colour. These are succeeded by compressed Pods, near 9 Inches long, having a Border on each Side, and contain one Row of oval, smooth, compressed Seeds.

This Sort may be propagated by Seeds, which should be sown on a hot Bed in Spring, and when the Plants come up, treated as the 7th Sort, with which Management

ment the Plants will thrive, and produce Flowers in a few Years.

The 16th Sort hath very slender trailing Stalks, about two Feet long, which are garnished with winged Leaves, sitting close to the Branches, and are composed of many narrow Pinnæ, like those of the sensitive Plant; the Flowers come out single from the Side of the Stalk, upon long slender Foot Stalks, which are small, of a bright yellow Colour, shaped like those of the other Species, and succeeded by short flat Pods, containing 2 or 3 Seeds. This grows naturally in *Jamaica*. It is a biennial Plant, and is treated as the first Sort.

The 17th Sort was sent me from *La Vera Cruz*, where it grows naturally. This rises with several shrubby trailing Stalks, two Feet long, sending out many Side Branches, very closely garnished with winged Leaves, composed of several Pair of very narrow Pinnæ, smaller than those of the sensitive Plant. The Flowers are produced single from the Side of the Branches, on very short Foot Stalks; they are large, of a deep Orange Colour, and are succeeded by short, narrow, smooth Pods.

This Plant will continue two or three Years, and produce Flowers annually, but it must be treated as the other tender Sorts, for it will not thrive unless preserved in a warm Stove, where it will perfect Seeds the 2d Year. It flowers in *July* and *August*, and the Seeds ripen in Autumn.

The 18th Sort was sent me from *Campeachy*. This rises with a shrubby slender Stalk, about two Feet high, dividing upward into several Branches, thinly garnished with winged Leaves, composed of three Pair of oval Lobes, the upper being the largest; these stand upon long Foot Stalks, from the Base of which comes out the Flower, standing single on a short Foot Stalk, of a pale yellow Colour, and is succeeded by a bending Pod, near four Inches long, having five longitudinal Wings, ending in a Point.

It is a biennial Plant, which if brought forward in the Spring, will flower the same Summer, and sometimes perfect Seeds in Autumn; but if the Plants are placed in a warm Stove, they will live through the Winter, and the following Season will flower earlier, and good Seeds may then be obtained.

The 19th Sort rises with a shrubby Stalk to the Height of 10 or 12 Feet, dividing upward into many Branches, garnished with winged Leaves, composed of 5 Pair of stiff Spear-shaped Lobes; the Flowers come out from the Side of the Branches, on long branching Foot Stalks, collected into large loose Spikes; these are of a deep Orange Colour, large, and shaped like those of the other Species, and are succeeded by flat brown Pods, about four Inches long, containing one Row of flat smooth oval Seeds. This Sort was sent me from *Carthagena*; it is propagated by Seeds as the other Species, and requires a warm Stove, where it will thrive and produce Flowers annually.

The 20th Sort was sent me from *La Vera Cruz*. This hath several trailing herbaceous Stalks, about two Feet long, which are garnished with winged Leaves, having long Foot Stalks, and are placed at a considerable Distance from each other; they have 2 Pair of smooth oval Lobes. The Flowers come out single from the Side of the Branches, of a pale yellow Colour, and are succeed-

ed by short, flat, hairy Pods, containing one Row of flat Seeds. This is an annual Plant, which must be raised on a hot Bed early in Spring, and treated as the other annual Sorts before-mentioned. It flowers in *July*, and the Seeds ripen in Autumn.

The 21st Sort grows common in all the Islands of the *West-Indies*. This rises with a slender Stalk, about two Feet high, sending out a few Side Branches upward, garnished with winged Leaves, composed of many Pairs of narrow Pinnæ, like those of the sensitive Plant. The Flowers come out upon short Foot Stalks from the Side of the Branches, each Foot Stalk sustaining 2 or 3 yellow Flowers, of the same Form with the other Species of this Genus; these are succeeded by short flat Pods, containing 3 or 4 flat Seeds in each.

This is an annual Plant, and is treated as the other Sorts; but as the Stalks grow upright, they will be too tall to remain under a Frame all the Summer; therefore when the Plants are advanced near the Glasses, they should be removed into the Stove, or a Glass Case, where they may have Room to grow, and be screened from the Cold, but in warm Weather should have a good Share of Air admitted to them; with this Management they will flower in *July*, and perfect Seeds in Autumn.

These Plants being preserved in the Gardens of the curious, I have enumerated them here, though several of them have not much Beauty to recommend them, but are chiefly kept for Variety. The most beautiful are the 4th, the 8th, 10th, 11th, 15th, and 19th Sorts; these all make a good Appearance in the Stove, especially when they are in flower; and as they retain their Leaves all the Year, make an agreeable Variety in the Winter Season, when intermixed with other Plants from the same Countries. All the Species of this Genus contract their Leaves every Evening, as the Sun declines, and open them again with the rising Sun in the Morning, which is also common to many other Plants, some of which turn their upper Surface outward, but all those of this Genus turn their under Surface outward, the upper being very closely folded together. These are what *Linnaeus* titles sleeping Plants. It must also be observed that most of those Plants, whose under Surface is turned outward, are such as grow upon dry sandy Land, where their Roots do not find a Supply of Moisture, so that the lower Surface of their Leaves being generally covered with a short soft Down, or Hairs, detain the nightly Dews, which are inhaled by the Leaves, and furnish Part of their Nourishment; whereas the other, whose upper Surface is turned outward, do not stand in need of this Supply; so being smooth, the Moisture is cast off, and not imbibed by them.

CASSIDA [an Helmet], Scull Cap. See Scutellaria.

CASSINE. *Lin. Gen. Plant.* 333. The Cassiberry Bush, and *South-Sea* Thea.

The Characters are,

It hath a small permanent Empalement, divided into five Parts; the Flower hath but one Petal, cut into five obtuse Segments, which spread open; it hath five Stamina, which spread from each other, and are terminated by single Summits; it hath a conical Germen, without a Style, supporting three reflexed Stigma. The Germen becomes an umbilicated Berry with three Cells, each containing a single Seed.

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The Species are,

1. *CASSINE foliis ovato-lanceolatis, serratis, oppositis, floribus corymbosis axillaribus.* Fig. Pl. Plat. 83. f. 1. *Cassine* with oval Spear-shaped Leaves placed opposite, and Flowers growing in round Bunches from the Sides of the Branches. This is the *Cassine vera perquam similis, arbuscula, Phillyrea foliis antagonistis, ex Provincia Carolinensi.* Pluk. Mant. 40. The Cassioberry Bush.

2. *CASSINE foliis lanceolatis alternis semperverentibus, floribus axillaribus.* Fig. Pl. Plat. 83. f. 2. *Cassine* with ever green Spear-shaped Leaves, placed alternately, and Flowers proceeding from the Sides of the Branches. This is the *Cassine vera Floridanorum, arbusculâ bacciferâ, Alaterni ferme facie, foliis alternatis tetraphyren.* Pluk. Ever-green *Cassine*, Yapon, or South-Sea Thea.

The 1st Sort rises with 2 or 3 Stems, which send out many Side Branches their whole Length, and become bushy; these seldom rise more than 8 or 9 Feet high. The Branches are garnished with oval Spear-shaped Leaves, sawed on their Edges, which grow opposite. Toward the upper Part of the Branches, the Flowers come out from the Sides, growing in roundish Bunches; these are white, and are divided into five Parts almost to the Bottom; in their Center is placed the Germen, attended by five Stamina, which spread open, near as much as the Segments of the Petal. After the Flower is past, the Germen swells to a round Berry, having three Cells, each containing a single Seed.

The 1st Sort is now become common in the Nurseries near London, where it is propagated by laying down the Branches, which afford Shoots in Plenty for that Purpose, so as to become very bushy and thick, if they are not cut off; Numbers of these Shrubs produce Flowers in England every Year, but none of them ripen Seeds.

The Leaves of this Plant are extremely bitter, so that if a single one is chewed, the Bitterness cannot be gotten rid of in a long Time. They continue green very late in Autumn, if the Season proves mild, and come out early in Spring, but are frequently pinched by the Frost in March, when they appear so soon. This Shrub flowers in July and August, it grows naturally in Virginia and Carolina.

It loves a light Soil, not too dry, and warm Situation; for, in exposed Places, the young Shoots are frequently killed in Winter, whereby the Shrubs are rendered un-fightly, but where they are near the Shelter of Trees, or Walls, they are very rarely hurt.

The 2d Sort grows naturally in Carolina, and some warm Parts of Virginia, but chiefly near the Sea; this, in the natural Places of its Growth, rises to the Height of 10 or 12 Feet, sending out Branches from the Ground upward, which form themselves into a Sort of Pyramid, and garnished with Spear-shaped Leaves, placed alternately; these are in Texture and Colour like those of *Alaternus*, and continue green, through the Year. The Flowers are produced in close Whorls round the Branches, at the Foot Stalks of the Leaves; they are white, and of the same Shape as the former, these are succeeded by red Berries, like those of the former Sort.

This Plant was many Years preserved in several curious Gardens near London, till the severe Winter in 1739, when most of them were destroyed, so that there was scarce any left; but of late many of the young

Plants have been raised from Seeds, which came from Carolina, some of which have been growing in the full Ground, 4 or 5 Years, and have resisted the Cold of the Winters, without Covering, but I fear they will suffer in very cold Seasons, where they are not very well sheltered. If this Plant can be brought to thrive well in England, and to endure the Winter in the open Air; it will be a fine Plant, to make a Variety in Plantations of ever-green Trees. The Leaves of this Sort are not so bitter as those of the first, especially when green, therefore are preferred to them for making the Thea; but an Infusion of the Leaves of the first, has been taken for a Loss of Appetite by some Persons with good Success; but it must not be too strong, lest it should prove emetic or cathartic.

The Inhabitants of North Carolina and Virginia, where this Shrub grows in Plenty, give it the Title of Yapon, which I suppose to be the Indian Name; being much esteemed by the Indians for its medicinal Virtues; this grows to the Height of 10 or 12 Feet; the Leaves are about the Size and Shape of those of the small leaved *Alaternus*, but somewhat shorter, and a little broader at the Base; they are a little notched about the Edges, of a thick Substance, and deep green Colour; the Flowers are produced at the Joints near the Foot Stalk of the Leaves; but the Cassioberry Bush produces its Flowers in Umbels at the Extremity of the Shoots; the Berries of this Yapon continue upon the Plants most Part of the Winter, and, being of a bright red Colour, inter-mixed with the green Leaves, make a fine Appearance at that Season. From these Berries continuing so long untouched by the Birds, we may reasonably conclude, they have some venomous Quality, because few of the Fruits or Berries, which are wholesome, escape the Birds, in a Country where there are such Flocks of various Kinds.

These Trees are propagated by sowing their Seeds (which are obtained from Carolina, where they grow in great Plenty near the Sea Coasts); they should be sown in Pots filled with light sandy Earth, and plunged into a gentle hot Bed, observing to water them frequently, until you see the Plants appear, which is sometimes in five or six Weeks time, and at other Times they will remain in the Ground until the second Year; therefore, if the Plants should not come up in two Months, you should remove the Pots into a shady Situation, to remain till October, being careful to keep them clean from Weeds, and now and then in dry Weather giving them a little Water; then remove these Pots into Shelter during the Winter Season; and in the March following put them upon a fresh hot Bed, which will forward their Vegetation.

When the Plants come up, they should, by Degrees, be exposed to the open Air, to inure them to our Climate; yet they should not be exposed to the open Sun at first, but rather let them have the Morning Sun only, placing them for some Time where they may be sheltered from the cold Winds; they should enjoy a Shelter during the 2 or 3 first Winters; after which the Cassioberry Bush may be planted abroad; but the South-Sea Thea should be kept in Pots a Year or two longer, being slower of Growth, and will therefore not have Strength enough to resist the Cold when young.

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The *Paraguay*, or *South-Sea Thea*, is accounted by the *Indians* very wholesome, and (as I have been informed by several worthy Persons, who resided for several Years in *Carolina*) is the only Physick the *Indians* use, and for which at certain Times of the Year, they come in Drove, some hundred Miles distant, for the Leaves of this Tree (it not being known to grow at any considerable Distance from the Sea); where their usual Custom is, to make a Fire upon the Ground, and, putting a great Kettle of Water thereon, they throw into it a large Quantity of these Leaves, and immediately set themselves round the Fire, and, with a Bowl that holds about a Pint, they begin drinking large Draughts, which in a very short Time vomits them severely; thus they continue drinking and vomiting, for the Space of two or three Days, until they have sufficiently cleansed themselves; then they gather every one a Bundle of the Tree to carry away with them, and retire to their Habitations. But these Gentlemen observed something very extraordinary in the Operation of this Plant, which was, that in vomiting it gave them no Uneasiness, or Pain, but came away in a full Stream from their Mouths without declining their Heads, or the least Reaching.

This Plant is supposed to be the same as that which grows in *Paraguay*, where the *Jesuits* of that Country make a great Revenue of the Leaves, which they export to other Countries, where it is infused and drank like Tea; indeed, there are some who doubt its being the same; which will be difficult to determine, since there is little Converse between the Inhabitants of *Paraguay*, and those in *Europe*; and all the Leaves of that Tea, which have been brought to *Europe*, have been generally so broken and defaced, as to render it almost impossible to know their true Figure; however, from some of the fairest Leaves, which were picked out of the *Paraguay* Tea by a Person of Skill, who compared them with those of the *Yapon*, he had great Reason to believe they were the same; and as the Virtues attributed to the *Yapon* are nearly, if not absolutely, the same with those of the *Paraguay*, the *Indians* of these Northern Parts of *America* making the same Use of it as the Inhabitants of the South Parts of *America* do, viz. to restore lost Appetite, and they say it gives them Courage and Agility, for which Purposes it has been in Use Time out of Mind; we may also observe, that the Place of its Growth in the North, is the same Latitude as *Paraguay* is South.

CASTANEA. *Tourn. Inst. Raij. Meth. Plant.* 140. *Fagus*. *Lin. Gen. Plant.* 951. The Chestnut Tree, in French *Chateignier* or *Maronnier*.

The Characters are,

It hath male and female Flowers on the same Tree, sometimes at separate Distances, and at other Times near each other. The male Flowers are fixed to a long String, forming a sort of Katkin; these have each an Empalement of one Leaf, cut into five Parts; they have no Petals, but include about ten or twelve bristly Stamina, terminated by oblong Summits. The female Flowers have also an Empalement of one Leaf, divided into four Parts, having no Petals but a Germen fixed to the Empalement, supports three Styles crowned by a reflexed Stigma. The Germen, which is situated at the Base of the Empalement, becomes a roundish Fruit armed with soft Spines, including one or more Nuts.

The Species are,

1. *CASTANEA foliis lanceolatis acuminato-serratis, subtus nudis*. Chestnut with Spear-shaped Leaves sharply sawed, and naked on their under Side. This is the *Castanea sativa*. *C. B. F.* 418. The manured Chestnut.

2. *CASTANEA foliis lanceolato-ovatis acutè serratis, subtus tomentosis, amentis filiformibus nodosis*. Chestnut with oval Spear-shaped Leaves sharply sawed, which are woolly on their under Side, and a slender knotted Katkin. This is the *Castanea pumila Virginiana, racemosa fructu parvo in singulis capsulis ebinato unico*. *Pluk. Alm.* 90. The Chinquapin.

3. *CASTANEA foliis oblongo-ovatis, serratis, fructu rotundo maximo ebinato*. Chestnut with oblong, oval sawed Leaves, and a very large, round, prickly Fruit. This is the *Sloanea amplis Castanea foliis, fructu ebinato*. *Plum. Nov. Gen.* 49. *Sloanea* with large Chestnut Leaves, and a prickly Fruit.

The Chestnut is a Tree which deserves our Care, as much as any propagated in this Country, either for Use or Beauty, being one of the best Sorts of Timber, and affording a goodly Shade. It will grow to a very great Size, and spread its Branches finely on every Side where it has Room. The Leaves are large, of a lucid green, and continue late in Autumn; nor are they so liable to be eaten by Insects, as are those of the Oak, which renders them very unsightly great Part of Summer; I have never observed this to be the Case with the Chestnut, which makes them more valuable for Parks and Plantations for Ornament; and there is no better Food for Deer, and many other Animals, than their Nuts, which most of them prefer to Acorns; but yet, there should not be many of these Trees planted too near the Habitation; because, when they are in flower, they emit a very disagreeable Odour, which is offensive to most People.

Several Varieties of this Tree have accidentally arisen from Seeds, which have been supposed distinct Species; but the Differences are only in the Size of their Fruit and Leaves, which have been altered, and improved by Culture; so that the wild and manured Chestnut, are undoubtedly the same; for I have frequently found, that Nuts taken from the same Tree, and cultivated in the same Soil, with equal Care, have produced Trees with very small Fruit; and among them have been others, whose Fruit have been as large as those of the Parent Tree; therefore they can be only esteemed as Varieties. But in many Countries, where the Trees are cultivated for their Fruit, the People graft the largest and fairest Fruit, upon Stocks of Chestnut raised from the Nut; and these grafted Trees are by the French called *Maronnier*, but these grafted Trees are unfit for Timber.

There is also a Chestnut with variegated Leaves, which is propagated in the Nurseries by way of Curiosity: This is done by budding and inarching it upon common Chestnut Stocks, in the same Manner as other Fruit Trees; but these variegated Trees and Plants, are not so much regarded now, as they were some Years past.

The Dwarf branching Chestnut mentioned in the Books, I take to be only a Variety of the Common; for Dr. Boerhaave shewed me some young Trees in his Garden near *Leyden*, which he raised from Nuts sent him by *Micelli* from *Florence*, as the true Fruit of the Dwarf Chestnut,

Chestnut, but there appeared no Difference between those, and some others raised from Nuts of the large Sort.

The 3d Sort grows in *South Carolina*, from whence some of the Fruit with their outer Covers, were sent to the Duke of *Bedford*: These were as large and round as a Tennis Ball, and armed all over with strong Spines like a Hedge-hog: These *Capsulae* were divided regularly in four Cells, each containing one small Chestnut. I compared these with Father *Plumier's* Description and Figure, which he exhibited under the Title of *Slaanea*, and found them to agree exactly; looking through the Box in which these were sent, I found some of the Leaves of the Tree, which also tallied with his Description, and confirmed my former Opinion; therefore, as I could see no other Difference between the Fruit of this, and the common Chestnut, but its having four regular Cells, divided by Partitions, whereas those of the Chestnut have but 2 or 3; I have joined them together, being persuaded, that farther Observations, will justify my so doing.

It does not appear where *Plumier* found this Tree growing naturally, though it is probable, it might be in *Louisiana*; for I think it could not be in either of the *West India* Islands, where the Heat is too great, for this Tree to thrive; though this is tender while young, for 2 or 3 young Plants which were raised in *England*, did not survive the 3d Winter.

The 1st of these Trees was formerly in greater Plenty than at present, as may be proved by the old Buildings in *London*, which were for the most Part of this Timber; and in a Description of *London*, written by *Fitz-Stephens*, in *Henry the Second's* Time, he speaks of a very noble Forest, which grew on the North Part of it: *Proxime* (says he) *patet foresta ingens, saltus numerosi ferarum, latebrae cervorum, damarum, aprorum, & taurorum sylvestrium, &c.* And there are some Remains of old decayed Chestnuts, in the old Woods and Chaces not far distant from *London*; which plainly proves, that this Tree is not so great a Stranger to our Climate, as many People believe, and may be cultivated in *England*, to afford an equal Profit with any of the larger Timber Trees, since the Wood is equal in Value to the best Oak, and, for many Purposes, far exceeding it; particularly for making Vessels for all Kinds of Liquor, it having a Property (when once thoroughly seasoned) of maintaining its Bulk constantly and is not subject to shrink or swell, as other Timber is too apt to do; and I am certainly informed, that all the large Casks, Tuns, &c. for Wines in *Italy*, are made of this Timber; and it is for that, and many more Purposes, in greater Esteem amongst the *Italians*, than any other Timber whatever. It is also very valuable for Pipes to convey Water under Ground, enduring longer than the Elm, or any other Wood. In *Italy* it is planted for Coppice Wood, and is very much cultivated in Stools, to make Stakes for Vines; which, being stuck into the Ground, will endure seven Years, which is longer than any other Stakes will do, by near half the Time. The Usefulness of the Timber, together with the Beauty of the Tree, renders it well worth propagating, especially in Avenues or smaller Plantations near a Dwelling-House.

These Trees are propagated by planting the Nuts in *February*, in Beds of fresh undunged Earth. The best Nuts for sowing, are such as are brought from *Portugal*

and *Spain*, and sold in Winter for Eating, provided they are not Kiln-dried, which is generally the Case of those brought from Abroad, which is done to prevent their sprouting in their Passage; therefore, if they cannot be procured fresh from the Tree, it will be much better to use those of the Growth of *England*, which are full as good to sow for Timber or Beauty, as any of the foreign Nuts, though their Fruit is much smaller: These should be preserved, until the Season for sowing, in Sand, where Mice, or other Vermin cannot come to them, otherwise they will soon destroy them: Before you set them, it will be proper to put them into Water, to try their Goodness, which is known by their Weight; those that swim on the Surface of the Water should be rejected, as good for nothing; but such as sink to the Bottom, you may be sure are good.

In setting these Seeds or Nuts, the best Way is, to make a Drill with a Hoe (as is commonly practised in setting Kidney Beans) about 4 Inches deep, in which you should place the Nuts, at about 4 Inches Distance, with their Eye uppermost; then draw the Earth over them with a Rake, and make a second Drill at about a Foot Distance from the former, proceeding as before, allowing 3 or 4 Rows in a Bed, with an Alley between, 3 Feet broad for a Convenience of clearing the Beds, &c. When your Plantation is finished, you must be careful that it is not destroyed by Mice, or other Vermin; which is very often the Case, if they are not prevented by Traps, or other Means.

In *April* these Nuts will appear above Ground; you must therefore observe to keep them clear from Weeds, especially while young: In these Beds they may remain for 2 Years, when you should remove them into a Nursery, at a wider Distance. The best Season for transplanting these Trees, is either in *October* or the latter End of *February*; but *October* is the best Season: The Distance these should have in the Nursery, is three Feet Row from Row, and one Foot in the Rows: You must be careful in transplanting, to take them up without injuring their Roots, nor should they remain long out of the Ground; but if these Trees have a downright Tap Root, it should be cut off, especially if they are intended to be removed again; this will occasion their putting out lateral Roots, and render them less subject to miscarry, when they are removed for good.

The Time generally allowed in this Nursery, is 3 or 4 Years, according to their Growth; but the younger they are transplanted, the better they will succeed; during which, you should be careful to keep them clear from Weeds, observing also to prune off lateral Branches, which would retard their upright Growth; and where you find any that are disposed to grow crooked, either by their upper Bud being hurt, or from any other Accident, you may the Year after planting, in *March*, cut them down to the lowermost Eye next the Surface of the Ground, which will cause them to make one strong upright Shoot, and may be afterwards trained into good straight Trees: But this should not be practised, unless the Plants have absolutely lost their leading Shoot; for although the Stems of the Trees should be very crooked (as is generally the Case with these Trees when young); yet when they are transplanted out, and have Room to grow, as they increase in Bulk, they will grow more upright,

upright, and their Stems will become strait, as I have frequently observed, where there have been great Plantations.

But in doing this, you must be careful not to disturb their Roots, which, perhaps might destroy them. These Trees require no other Manure than their own Leaves, which should be suffered to rot upon the Ground; and in the Spring of the Year, the Ground should have a slight Digging, when these should be buried between their Roots, but not too close to the Trees, which might be injurious to their young Fibres.

After remaining three or four Years in the Nursery, they will be fit for transplanting, either in Rows for Avenues to a House, or in Quarters for Wilderness Plantations; but if you intend them for Timber, it is by much the better Method to sow them in Furrows (as is practised for Oaks, &c.) and let them remain unremoved; for these Trees are apt to have a downright Tap Root, which, being Hurt by transplanting, is often a Check to their upright Growth, and causes them to Shoot out lateral Branches, as the Oak, Walnut, &c.

Therefore, where any of these Trees are planted for Timber, they should remain unremoved: But where the Fruit of them is more sought after, then it is certainly the better Way to transplant them; for as transplanting is a Check to the luxuriant Growth of Trees, so it is a Promoter of their Fruetification, as may be evinced by observing low shrubby Oaks, Walnuts, &c. which generally have a greater Plenty of Fruit, than any of the larger and more vigorous Trees; and the Fruit of such Trees is much superior in Taste, though the Seeds of vigorous Trees are vastly preferable for Plantations of Timber; for it is a constant Observation, that, by saving Seeds from Dwarf Trees or Plants, from Time to Time, they may be rendered much lower in their Growth, than their natural Size; but where the Fruit is most desired, then they should be taken from such Trees as produce the largest and sweetest Nuts, which are commonly found upon such Trees as spread the most, and have horizontal Roots; for the weaker Trees being less capable to furnish a Supply of Nourishment, and having a greater Quantity of Fruit upon them, to which this must be distributed, together with their Roots lying near the Surface of the Ground (by which means the Juices are better prepared by Sun, Air, &c. before it enters their Vessels), it is certain their Juices are better digested, and their Fruits better matured, than those can possibly be, which grow upon strong vigorous Trees, which have long Tap Roots running several Feet deep into the Earth, and consequently take in vast Quantities of crude unprepared Juice, which is buoyed up to the extreme Parts of the Tree; and these seldom having many lateral Branches, to digest and prepare their Juice, by perspiring or throwing off the crude Part, before it enters the Fruits.

And this, I dare say, universally holds good in all Sorts of Fruit Trees, and is often the Occasion of the good and bad Qualities of the same Sorts of Fruits growing on the same Soil.

What has been related about grafting this Tree into the Walnut, to promote their bearing, or render their Fruit fairer; or inoculating Cherries into the Chestnut, for later Fruit, is very whimsical and silly, since neither

the Chestnut nor Walnut will receive its own Kind any other way than by inoculating or inarching; and it is the latter only, by which the Walnut can be propagated; nor was it ever known, that any two Trees of a different Genus would take upon each other, so as to produce either a good Tree or Fruit; therefore we may justly explode all those different Graftings of various Trees upon each other, so much talked of by the Ancients; at least we may suppose these Trees are not known by the same Names now, that they are mentioned by in their Writings; for I have made many Trials upon them, which, although performed with great Care, and in different Seasons, yet scarcely one of them succeeded. But to return:

If you design a large Plantation of these Trees for Timber, after having two or three Times ploughed the Ground, the better to destroy the Roots of Weeds, you should make your Furrows about six Feet Distance from each other, in which you should lay the Nuts about ten Inches apart, covering them with Earth about three Inches deep; and, when they come up, you must carefully clear them from Weeds: The Distance allowed between each Row, is for the Use of the Horse Hoeing Plough, which will dispatch a great deal of this Work in a short Time, but it should be performed with great Care, so as not to injure the young Plants; therefore the Middle of the Spaces only should be cleaned with this Instrument, and a Hand Hoe must be used to clean between the Plants in the Rows, and also on each Side, where it will be unsafe for the Plough to be drawn; and in Hand hoeing, there must be great Care taken, not to cut the tender Rind of the Plants. If the following Spring, the Spaces are carefully stired with the Plough, it will not only make the Ground clean, but also loosen it, and the Sun and Moisture will more easily penetrate the same, which will greatly promote the Growth of the Plants; the oftener these Ploughings are repeated, the cleaner will be the Ground, and the greater will be the Progress of the Plants, which cannot be kept too clean while they are young: When these have remained 3 or 4 Years (if the Nuts succeeded well), you will have many of these Trees to remove; which should be done at the Seasons before directed, leaving the Trees 3 Feet Distance in the Rows; at which Distance they may remain for 3 or 4 Years more, when you should remove every other Tree, to make Room for the remaining, which will reduce the whole Plantation to 6 Feet square; which will be Distance enough for them to remain in, until they are large enough for Poles, when you may cut down every other of these Trees (making Choice of the least promising) within a Foot of the Ground, in order to make Stools for Poles, which, in 8 or 10 Years Time, will be strong enough to lop for Hoops, Hop Poles, &c. for which Purposes they are preferable to most other Trees; so that every tenth Year, here will be a fresh Crop, which will pay the Rent of the Ground, and all other Charges, and, at the same Time, a full Crop of growing Timber left upon the Ground: But as the large Trees increase in Bulk, their Distance of 12 Feet square will be too small, therefore, when they have grown to a Size for small Beards, you should sell every other Tree, which will reduce them to 24 Feet square, which is a proper Distance for them

remain for good; this will give Air to the Underwood (which, by this Time, would be too much over-hung by the Closeness of the large Trees); by which Means that will be greatly encouraged, and the small Timber felled, will pay sufficient Interest for the Money at first laid out in Planting, &c. with the Principal also; so that all the remaining Trees are clear Profit, for the Under-wood still continuing, will pay the Rent of the Ground, and all other Expences; and what a fine Estate here will be, for a succeeding Generation, in about fourscore Years, I leave every one to judge.

The Chinquapin, or Dwarf Virginian Chestnut, is at present very rare in England; it is very common in the Woods of America, where it seldom grows above 12 or 14 Feet high, and produces great Plenty of Nuts, which are, for the most Part single, in each outer Coat or Capsule. This Tree is very hardy, and will resist the severest of our Winters in the open Ground; but is very apt to decay in Summer, especially if planted in very dry Ground. The Nuts, if brought from America, should be put in Sand as soon as they are ripe, and sent to England immediately; otherwise they lose their growing Quality, which is the Reason this Tree is at present so scarce with us; for not one Seed in five Hundred sent over ever grew, which was owing to the Neglect of putting them up in this Manner: Indeed, most of the Nuts which have been brought over, have been Kilndried, to preserve them from sprouting, which infallibly destroys the Germen: When the Nuts arrive, they should be put into the Ground as soon as possible; and if the Winter should prove severe, it will be proper to cover the Ground with Leaves, Tan, or Pease Haulm, to prevent the Frost from penetrating, so as to destroy the Nuts: This Sort of Chestnut delights in a moist Soil, but if the Wet continues long on the Ground in Winter, it is apt to kill the Trees. This Tree will take by inarching upon the common Sort; but the Trees so propagated, seldom succeed well.

I have seen a Specimen, and some Nuts of a Dwarf Chestnut, brought from North America, which differed from all the other Sorts; and have been informed, that the French have raised Plants of this Kind, from the Nuts brought from Canada, but as I have not seen any of the Plants raised in England, can give no farther Account of it, than that some late Writers have supposed it to be the Dwarf branching Kind beforementioned.

CASTANEA EQUINA. See Esculus.

CASTOREA. See Durantia.

CATANANCHE. Lin. Gen. Plant. 824. *Catanance*. Tourn. Inst. Candia Lion's Foot.

The Characters are,

The Flower is composed of many hermaphrodite Florets, those on the Border being longer than those in the Center; these are included in one common scaly Empalement, which is permanent and elegant. The Florets are of one Leaf, Tongue-shaped, indented in five Parts, and are longer than the Empalement; these have each five short hairy Stamina, terminated by cylindrical Summits. The Germen is situated below the Flower, supporting a slender Style the Length of the Stamina, crowned with a bifid Stigma which is reflexed. The Germen becomes a single oval Seed, which is compressed and crowned with Bristles, inclosed in the Empalement.

The Species are,

1. *CATANANCHE squamis calycinis inferioribus ovatis*. Hort. Cliff. 390. *Catananche* whose under Scales of the Empalement are oval. *Catananche quorundam*.

2. *CATANANCHE squamis calycinis inferioribus lanceolatis*. Hort. Cliff. 390. *Catananche* whose under Scales of the Empalement are Spear-shaped. This is the *Catananche flore luteo, latiore folio*. Tourn. Inst. R. H. 478. *Catananche* with a yellow Flower and a broader Leaf.

Both these Plants grow naturally in the South of France, in Spain, Italy, and Candia, from whence it had the Title of Candia Lions Foot.

The 1st Sort sends out many long, narrow, hairy Leaves, which are jagged on their Edges, like those of Buckhorn Plantain, but the Leaves are broader, the Jags are deeper, and at greater Distances; these lie flat on the Ground, turning their Points upwards, which are very narrow. Between the Leaves come out the Flower Stalks, in Number proportionable to the Size of the Plant; for from an old thriving Root, there is frequently 8 or 10, and young Plants do not send out more than 2 or 3. These Stalks rise near 2 Feet high, dividing into many small Branches upward, which are garnished with Leaves like those below, but are smaller, and have few or no Jags on their Edges: Each of these smaller Branches (or Foot Stalks) are terminated with single Heads of Flowers, having a dry silvery scaly Empalement, in which are included 3 or 4 Florets, whose Petals are broad, flat, indented at their Ends, and of a fine blue Colour, having a dark Spot at Bottom, and in each the 5 Stamina, with their yellow Summits, standing a little above the Petal, make a pretty Appearance.

It has been by some Authors titled *Cbondrilla carulea*, i. e. Blue Gum Cicory, and by others *Sesamoides*, or *Catanance Sesamoides*. Caspar Bauhin calls it *Cbondrilla carulea cyani capitulo*. Pin. 130. Blue Gum Cicory with a Blue Bottle Head. There is a Variety with double Flowers, which is not common in the English Gardens.

The 2d Sort hath broader Leaves than the first, which are smother, and less jagged on their Edges: From each Root arise one or two Stalks, which grow a Foot and Half high, sending out 2 or 3 slender Foot Stalks, each sustaining a single Head of yellow Flowers, inclosed in a dry scaly Empalement, of a darker Colour than those of the first; as these Flowers are small, they make but little Appearance, therefore the Plant is only kept for the Sake of Variety.

The 1st of these Plants is Perennial, and may be propagated by Heads taken off the Mother Plant, either in Spring or Autumn; but those Plants which are raised from Seeds, are much stronger than those from Slips. These Plants are commonly planted in Pots filled with light sandy Soil, in order to shelter them in the Winter from severe Frosts; but if they are planted in warm Borders, either under Walls, Pal'es, or Hedges, and in a moderately dry Soil, they will endure abroad very well. This Plant begins flowering in May, and continues till August or September (especially if the Summer is not too dry), it is a pretty Ornament to a Garden, and is easily kept within Bounds. This may also be propagated by Seeds, which should be sown in a Border of good light Earth in March; and in May, when the Plants come up, they may be either transplanted into Pots or Borders, where they are to remain for flowering. These Plants should

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should remain unremoved for 3 or 4 Years when they are planted in the full Ground, which will cause them to flower better, and produce more Seeds. The Seeds ripen in *August*.

The other Sort is annual, and therefore only propagated by Seeds, which ripen very well in this Country. The Time for sowing them is early in *March*, in Beds or Borders of light Earth where they are to remain; they come up in a Month's time, and require no other Care but to keep them clean from Weeds, and thin the Plants where too close. These flower in *June*, and perfect Seeds in *August* or *September*; but as they have little Beauty, are not often kept in Gardens.

CATAPUTIA MAJOR. See Ricinus.

CATAPUTIA MINOR. See Euphorbia.

CATARIA. See Nepeta.

CATCH-FLY. See Lychnis.

CATERPILLARS.

There are several Kinds of this Insect, which are very pernicious to a Garden; but there are two Sorts which are the most common, and destructive to young Plants: one of them is that which the white Butterfly breeds: It is of a yellowish Colour, spotted with black; and commonly infests the tender Leaves of Cabbages, Cauliflowers, and the Indian Cress. These eat off all the tender Parts of the Leaves, leaving only the Fibres entire; so that very often we see, in the Autumn Season, whole Gardens of Winter Cabbages and Savoys almost destroyed by them; especially in those which are crowded with Trees, or near great Buildings. They increase most in very dry Seasons; and when the Plants have been stinted by Drought, they are constantly attacked; whereas those which are in Vigour, seldom suffer much by those Insects. Nor is there any other Method found out to destroy them, that I know of, but to pick them off the Plants before they are spread from their Nests; by which Means, though perhaps many may be overlooked, yet their Numbers will be greatly diminished. But this Work must be often repeated during the warm Weather, when the Butterflies are abroad, continually depositing their Eggs, which in a few Days time will be perfect Caterpillars. But as these, for the most part, feed upon the outer Leaves of Plants, they are more easily taken than the other Sort, which is much larger: The Skin is very tough, and of a dark Colour: This is called, by the Gardeners, a Grub, and is exceeding hurtful. The Eggs of this Sort of Caterpillar, are, for the most part deposited in the very Heart or Center of the Plant (especially in Cabbages); where, after it hath obtained its Form, it eats its Way out through all the Leaves thereof; and also their Dung, being lodged between the inclosed Leaves of the Cabbages, gives them an ill Scent.

This Insect also burrows just under the Surface of the Ground, and makes great Havock on young Plants, by eating them through their tender Shanks, and drawing them into their Holes. The Mischief is chiefly done in the Night: whenever you observe this, you should every Morning look over your Plants; and wherever you see any Plants eaten off, stir the Ground round about the Place with your Fingers an Inch deep, and you will certainly find them out. This is the only Method I know of destroying them.

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CATKINS, or IULUS. By the Botanists, called *Flos Amentaceus*: It is an Aggregate of Summits, which are joined together in form of a Rope or Cat's Tail, and is the male Flower of the Trees which produce them; as the Firs, Pines, Cedars, Walnuts, Birch Tree, and Willows.

CATESBÆA. Lin. Gen. Plant. The Lily Thorn.

The Characters are,

It hath a small permanent Empalement of one Leaf, with five sharp Indentures; the Flower is of one Leaf, Funnel-shaped, having a very long Tube, which gradually widens to the Top, where it is four cornered and spread open; it hath four Stamina rising in the Neck of the Tube, terminated by oblong erect Summits; the roundish Germen is situated under the Flower, supporting a slender Style, crowned by a single Stigma. The Germen afterward becomes an oval Berry with one Cell, filled with angular Seeds.

The Name was given to the Genus by Dr. Gronovius, in Honour of Mr. Mark Catesby, F. R. S. who brought the Seeds of it first into England, from the *Bahama Islands*, where he found it growing naturally; and he has exhibited a Figure of it in his History of *Carolina*.

We know but one Species of this Genus, viz.

CATESBÆA. Lin. Sp. Plant. 109. The Lily Thorn. This is the *Frutex spinosus Buxi foliis, plurimis simul nascentibus, flore tetrapetaloide, pendulo, sordide flavo, tubo longissimo, fructu ovali croceo, semina parva continente*. Catesb. Hist. Carol. 2. p. 100. Thorny Shrub, with Box Leaves growing in Clusters, a four cornered Petal, of a dull yellow Colour, and hanging Flower, with a very long Tube, and an oval Saffron coloured Fruit, containing small Seeds.

This Shrub was discovered by Mr. Catesby, near *Nassau Town*, in the Island of *Providence*, where he saw two of them growing, which were all he ever saw; from these he gathered the Seeds, and brought them to England in 1726, from which many Plants were raised in the English Gardens, some of which have since flowered here.

It rises with a branching Stem 10 or 12 Feet high, covered with a pale russet Bark; the Branches come out alternately, from the Bottom to the Top, garnished with small Leaves, resembling those of the Box Tree, coming out in Clusters all round the Branches, at certain Distances; the Flowers come out single from the Side of the Branches, hanging downward; they are tubulous, and near 6 Inches long, very narrow at their Base, but widening upward toward the Top, where it is divided into four Parts which spread open, and are reflexed backward: these are of a dull yellow Colour; after the Flower decays, the Germen swells to an oval fleshy Berry, the Size of a middling Plum, hollow within, and filled with small angular Seeds.

This Shrub is propagated by Seeds, which must be procured from the Country where it naturally grows; for it hath not produced any in England. If the entire Fruit are brought over in Sand, the Seeds will be better preserved; when they arrive in England, the Seeds must be sown in small Pots filled with light sandy Earth, and plunged into a moderate hot Bed of Tanners Bark, and now and then moderately watered. If the Seeds are good, the Plants will appear in about six Weeks, when, if the Heat of the Bed declines, the Tan should be turned

ed over to the Bottom, and, if necessary, some fresh added, to renew the Heat; for these Plants make but little Progress the first Year. When the Pots are again plunged into the Tan Bed, they must have fresh Air admitted to them every Day, in Proportion to the Warmth of the Season, and frequently refreshed with Water, in small Quantities, for much Wet will certainly kill them; if the Nights should prove cold, the Glasses should be covered with Mats every Evening. As these Plants grow slowly, they will not require to be removed out of the Seed Pots the first Year. In Autumn the Pots should be removed into the Stove, and plunged into the Tan Bed; and during Winter, the Plants should be watered with great Caution; in Spring the Plants should be carefully taken up, and each planted in a small Pot, filled with light sandy Earth, and plunged into a fresh hot Bed of Tanners Bark, being careful to shade them till they have taken fresh Root, also to refresh them with Water gently, as they may require it; and in Summer, when the Weather is warm, they should have a good Share of Air, but in Autumn must be removed into the Stove, where they should constantly remain, and must be treated afterward in the same Manner as other tender exotick Plants.

Most of the Plants raised from Mr. Catesby's Seeds, were killed by the severe Winter in 1739. but two Years ago I received some fresh Seeds, which succeeded so well, as to enable me to communicate Plants, to several curious Persons in England and Holland.

CAUCALIS, Bastard Parsley.

This is one of the umbelliferous Plants, with oblong Seeds, which are a little furrowed and prickly: The Petals of the Flower are unequal, and Heart-shaped.

There are several Species of this Plant preserved in the Botanick Gardens; but as there is no great Beauty or Use in any of them, I shall pass them over with only observing, the best Season to sow their Seeds is in Autumn, soon after they are ripe; for if they are kept till Spring, they seldom produce ripe Seeds again. They are most of them biennial, and require to be sown every other Year. We have five or six Species, which grow wild in England.

CAULIFEROUS Plants [of *Caulis*, Lat. a Stalk, and *fero*, to bear]; such Plants as have a true Stalk.

CAULIS is that which rises single above the Earth, from whence the Leaves or little Branches put forth, as *Jungius* defines it; or it is the upper Part of a Plant stretched forth to an Height, so that the Fore Parts differ not from the Hind, nor the Right from the Left. In Trees and Shrubs it is called *Caudex*; in Corn, *Calamus*; the Stalk of any Herb; the Stem, Trunk, or Body of a Tree. Lat.

CEANOTHUS. Lin. Gen. Plant. 237. *Euonymus* Com. Hort. New Jersey Thea.

The Characters are,

It hath a turbinated Empalement of one Leaf, which is permanent, and is cut into five acute Parts which close together; the Flower hath five roundish equal Petals which spread open, and are less than the Empalement; it hath five erect Stamina, placed opposite to the Petals, of equal Length and terminated by roundish Summits. It hath a three cornered Germen, supporting a cylindrical Style, crowned by an obtuse Stigma. The Germen becomes a dry

Capsule with three Cells, in which are lodged three oval Seeds.

The Species are,

1. CEANOTHUS *foliis trinerviis*. Lin. Sp. Plant. 195. *Ceanothus* with Leaves having three Nerves. This is the *Euonymus Novi Belgii corni fœminæ foliis*. Hort. Amst. 1. 167. New Holland Dogwood with female cornel Leaves, commonly called New Jersey Thea.

2. CEANOTHUS *foliis lanceolatis enerviis, stipulis subrotundis*. Lin. Sp. plant. 196. *Ceanothus* with Spear-shaped Leaves without Nerves, and roundish Stipulæ. *Alaternoides Africana lauri serratæ folio*. Com. Præl. 61. Bastard *Alaternus* of Africa, with a sawed Bay Leaf.

3. CEANOTHUS *foliis ovatis sessilibus, floribus singuloribus alaribus*. *Ceanothus* with oval Leaves close to the Branches, and single Flowers at the Wings of the Leaves.

The 1st Sort grows naturally in North America, from whence Plenty of the Seeds have been of late brought to Europe, by the Title of New Jersey Thea, where I have been informed the Inhabitants dry the Leaves to use as Thea. The People of Canada use the Root in Venereal Cases. I have received the Seeds of this Sort from New England, Pennsylvania, Virginia, and Carolina; and the French mention it as a common Shrub in Canada, where they say the Cattle browse upon it, and keep it very low.

In England this Shrub seldom rises more than 3 or 4 Feet high, sending out Branches on every Side from the Ground upward. The Branches are very slender; and as it is pretty late in the Spring before they begin to shoot, they keep growing very late; therefore, unless the Autumn proves dry and mild, the tender Shoots are often killed down very low by early Frosts; but, in favourable Seasons, the extreme Parts of the Shoots only are injured by the Cold. These Branches are garnished with oval pointed Leaves, having three longitudinal Veins running from the Foot Stalk to the Point, which diverge in the broad Part of the Leaves from each other: The Leaves are placed opposite by Pairs, and are of a light green Colour. At the Extremity of each Shoot the Flowers are produced in close thick Spikes, which are composed of five small Leaves, and are of a clear white: These appear in July, and make a very fine Appearance during their Continuance; for, as every Shoot is terminated by one of these Spikes, so the whole Shrub is covered over with Flowers, the Branches commonly growing very close to each other: And when the Autumn proves mild, these Shrubs often flower in October. After the Flowers are past, there succeeds to each Flower a tri-capsular Seed Vessel, slated at the Top, opening into three Cells, each having a single Seed. In warm Seasons the Seeds ripen very well in England. This Shrub is best propagated by Seeds, which should be sown in small Pots, and plunged into a moderate hot Bed, to bring up the Plants, which should be inured to bear the open Air by Degrees, and as soon as they have obtained a little Strength, they should be exposed in a sheltered Situation till Autumn, when they must be placed under a hot Bed Frame, to screen them from severe Frost in Winter, but in mild Weather they should be fully exposed to the open Air; for while the Plants are young, they will not endure the Cold of Winter. In the following Spring, before the Plants begin to shoot, they should be transplanted; some of them may be put into separate Pots, and

and the others into a Nursery Bed, in a warm Situation, where they may remain a Year or two to get Strength, after which Time they may be removed to the Places where they are designed to remain. They should have a dry Soil, and sheltered Situation, where they will thrive and flower extremely well; but in stiff cold Land, they are always very late in the Spring before they come out, so that their young Shoots are full of Sap in Autumn, and the first Frost commonly kills their Tops, which frequently causes them to die great part of their Length.

It may also be propagated by laying down the young Branches, which, in a light Soil, will put out Roots in a Year's Time, but these Layers should not be much watered; for as the Shoots are tender, Moisture will often occasion their rotting, when given in Quantities, or too often repeated; therefore the best Method is to cover the Surface of the Ground in dry Weather, all round the Layers, which will preserve a sufficient Moisture in the Ground, provided the Season is not extremely dry, in which Case they should have a little Water once in 8 or 10 Days, which will be sufficient.

The best Time for laying down these Branches, is in Autumn, and if after this is performed, the Surface of the Ground is covered over with some old Tan, taken from a decayed hot Bed, it will prevent the Frost from penetrating the Ground, which will secure them from Injury, and the same Covering will prevent the Winds from drying the Ground in Spring, and thereby promote their putting out Roots. These Layers, when rooted, may be taken up the following Spring, and treated in the same Manner as those raised from Seeds.

The 2d Sort grows naturally at the Cape of Good Hope, from whence it was originally brought to Holland, and has been since communicated to most of the curious Gardens in Europe, under the Title of *Alaternoides*, &c. and by some Authors it is titled *Ricinoides Africana arborescens*, &c. but Dr. Linnæus, having examined the Characters more exactly, has joined it to this Genus.

This rises 10 or 12 Feet, with a woody Stem, covered with a rough dark-coloured Bark, and sends out many weak Branches, which hang downward; these while young are green, but afterward change to a purplish Colour. They are garnished with oblong pointed Leaves, of a lucid green, which are smooth, and slightly sawed on their Edges. The Flowers are small, of an herbaceous Colour, coming out from the Side of the Branches; they sometimes appear in July, but are not succeeded by Seeds in this Country, nor do the Plants often produce Flowers, so that they are preserved only for the Beauty of their shining ever-green Leaves, which make a Variety in the Green-house during the Winter Season.

It may be propagated either by Layers, or Cuttings, the latter being a very sure and expeditious Method is generally preferred. The Cuttings should be planted in Spring in Pots filled with good Kitchen Garden Earth, and plunged into a very moderate hot Bed, observing to shade them in the Heat of the Day, and now and then refresh them with Water. In about two Months, or less, they will have taken Root, when they must be gradually inured to the open Air, placing them in a sheltered Situation, till they have obtained Strength, when they may be separated, and each planted in a small Pot filled with light Earth, placing them in the Shade till

they have taken fresh Root, then they may be removed and intermixed with other exotick Plants for the Summer Season; in Autumn they must be housed with Myrtles, and treated in the same Manner.

The 3d Sort was sent me from Paris. This grows naturally at Senegal, in Africa, from whence the Seeds were brought; it rises with a shrubby Stalk, about 3 Feet high, sending out several horizontal Branches, garnished with oval Leaves placed opposite growing close to the Branches; the Flowers come out at the Wings of the Leaves, with very short Foot Stalks, they are of an herbaceous Colour, and stand single at each Joint, almost the whole Length of the Branches; these are succeeded by dry Capsules, shaped like those of the first Sort.

This Plant requires to be placed in a warm Stove, otherwise it will not thrive in England; it is propagated by Seeds sown on a hot Bed in Spring, and when the Plants are fit to remove, they should be each planted in a small Pot filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, observing to shade them till they have taken Root; then they must be treated as other tender exotick Plants. In Autumn they must be placed in the Bark Stove, and during the Winter, must be watered with great Caution, for too much Moisture at that Season will destroy them.

CEDRUS. The Cedar Tree of Barbadoes. Mahogany, &c.

The Characters are,

It hath a tubulous Bell-shaped Empalement of one Leaf, indented in five Parts. The Flower is of one Leaf, divided at the Top into five Parts; it hath five short Stamina, which adhere at Bottom to the Germen, and are terminated by roundish Summits; in the Center is situated the roundish Germen, supporting a thick Stigma; the Germen becomes an oval Pod, having five Cells, opening from the Bottom upward with five Valves, having a double Cover, the outer being thick and woody, the inner very thin, which immediately surrounds the Seeds. In the Center is fixed a five cornered Column, the Length of the Pod, whose Angles are opposite to the Fissures of the Pod, to which the Seeds adhere, placed over each other like the Scales of Fish; these are thick at their Base, but upward are flat and thin, like the Wings adhering to the Seeds of Firs and Pines.

As the Cedar of Libanus is by Tournefort very properly referred to the Genus of *Larix*, and all the Berry bearing Cedars, are joined to the Junipers, I have given the Title of *Cedrus* to this Genus, as they were mentioned by imperfect Titles by most of the Authors who have treated of them; and as the first Sort has been generally known by the Appellation of Cedar, in the Countries where it naturally grows, so the applying the same Name to those Plants, which agree in their essential Characters with it, will join them properly together.

The Species are,

1. *CEDRUS foliis pinnatis, foliis multijugatis obtusis, fructu ovali glabro.* Cedar Tree with winged Leaves, composed of many Pairs of small Leaves (or Lobes) which are obtuse, and an oval smooth Fruit. This is the *Cedrus Barbadensum*, *alatis fraxini foliis non crenatis, fructu singulari, quinis involucriis crassis validis coccleato cavis, totidem semina membranis adhaerentibus & columna canaliculata pentagona prægrandi adnata, occultantibus ornato.* Pluk. Pbyt. Tab. 157. The Barbadoes Cedar Tree.

2. *CEDRUS*

2. *CEDRUS foliis pinnatis, foliolis oppositis, glabris, floribus racemosis sparsis.* Cedar with winged Leaves, whose Lobes are smooth, and stand opposite, and Flowers growing in loose Bunches. This is the *Arbor foliis pinnatis, nullo impari alium claudente, nervo ad latus unum excurrente fructu anguloso magno, semine alato instar Pinus.* Catesb. Hist. Carol. Vol. II. p. 181. Mahogany Tree.

3. *CEDRUS foliis alternis simplicibus, cordato-ovatis acutis, fructu pentagono mucronato.* Cedar with single Leaves placed alternately, which are oval, Heart-shaped, and acute, and have a five cornered pointed Fruit. This is the *Arbor excelsa Coryli folio ampliore.* Houst. Mss. The Tall Tree with a large Hazle Leaf.

The 1st Sort is commonly known under the Title of Cedar in the *British Islands of America*, where this Tree grows naturally, and is one of the largest Trees of that Country. The Trunks are so large, that the Inhabitants hollow them, and form them into the Shape of Boats, and Periaguas, for which Purpose they are extremely well adapted; the Wood being soft, it may be cut out with great Facility, and being light, it will carry a great Weight on the Water. There are Canoes in the *West-Indies*, which have been formed out of these Trunks, which are forty Feet long, and six broad; the Wood is light, of a brown Colour, and has a fragrant Odour, from whence the Title of Cedar has been given to it. The Wood is frequently cut into Shingles for covering Houses, and is found very durable; but as the Worms are apt to eat this Wood, it is not proper for building Ships, though often used for this Purpose, as also for sheathing them; it is often used for wainscoting Rooms, and to make Chests, because Vermin do not so frequently breed in it, as in many other Sorts of Wood, this having a very bitter Taste, which is communicated to whatever is put into the Chests, especially when the Wood is fresh, for which reason it is never made into Casks, because spirituous Liquors will dissolve part of the Resin, and thereby acquire a very bitter Taste.

This Tree rises with a strait Stem, to the Height of 70 or 80 Feet; while young the Bark is smooth, and of an Ash Colour, but as they advance, the Bark becomes rough, and of a darker Colour. Toward the Top it shoots out many Side Branches, which are garnished with winged Leaves, composed of 16 or 18 Pair of Lobes (or small Leaves) so that they are sometimes near three Feet long; the Lobes are broad at their Base, and near two Inches long, blunt at their Ends, and of a pale Colour; these emit a very rank Odour in the Summer Season, so as to be very offensive. As I have not seen any Flowers upon these Trees, I can give no Description of them. The Fruit is oval, about the Size of a Partridge's Egg, smooth, of a very dark Colour, and opens in five Parts, having a five cornered Column standing in the Middle, between the Angles of which the winged Seeds are closely placed, lapsing over each other like the Scales of Fishes.

There are some Plants of this Sort in *England*, which are preserved in the Gardens of those who are curious in collecting exotick Plants; these have been raised from the Seeds, brought from *Barbadoes*, but they are too tender to live in the open Air in *England*, therefore these Plants should be treated in the same Manner as the Mahogany next mentioned, but they are of much quick-

er Growth; for in four Years, from the Seed, I had the Plants upward of ten Feet high.

I received Plants of this Kind from *Paris*, by the Title of *Semiruba*, but whether the Root of this Tree is what they use in Medicine under that Appellation, I cannot say. The Seeds have also been sent me from the *French Islands*, by the Title of *Acajou Cedre*.

It is propagated by Seeds, which are easily procured from the *American Islands*; they must be sown on a hot Bed in Spring, and the Plants treated as the next.

The 2d Sort is the Mahogany, whose Wood is now well known in *England*.

This Tree is a Native of the warmest Parts of *America*, growing plentifully in *Cuba*, *Jamaica*, and *Hispaniola*; there are also many of them in the *Babama Islands*. In *Cuba* and *Jamaica* there are Trees of a very large Size, so as to cut into Planks of six Feet Breadth: but those on the *Babama Islands* are not so large, though they are frequently 4 Feet Diameter, and rise to a great Height, notwithstanding they are generally found growing upon the solid Rocks, where there is scarce any Earth for their Nourishment. The Wood which has been brought from the *Babama Islands* has usually passed under the Appellation of *Madeira Wood*, but there is no Doubt of its being the same as the Mahogany. The *Spaniards* make great Use of this Wood for building Ships, for which Purpose it is better adapted, than any other Sort of Wood yet known, being very durable, resisting Gun Shot, and burying the Shot without splintering; nor is the Worm so apt to eat this Wood as that of the Oak, so that for the *West-Indies* the Ships built of Mahogany are preferable to any other.

The Excellency of this Wood, for all domestick Uses, is now sufficiently known in *England*; and it is a Matter of Surprise, that the Tree should not have been taken Notice of by any Historian or Traveller, to this Time except Mr. Catesby, in his *Natural History of Carolina, and the Bahama Islands*, although the Wood has been many Years brought to *England* in great Quantities.

In the *West-Indies* these Trees are of quick Growth, and arrive to a large Size in a few Years; the Manner of their Propagation in the *Babama Islands*, as described by Mr. Catesby, is as follows; when the Fruit is ripe, the outer hard Shell, or Covering, separates at the Bottom, next the Foot Stalk, thereby exposing the Seeds, which are fastened to a hard five cornered Column, standing in the Middle; these Seeds being broad and light, are dispersed on the Surface of the Ground, which is very rocky; Such of the Seeds as happen to fall into the Fissures of the Rock, very soon send forth Roots, and if these tender Fibres meet with Resistance from the Hardness of the Rock, they creep out of the Surface of it, and seek another Fissure, into which they creep, and swell to such a Size and Strength, as to break the Rock, and thereby make Way for the Root's deeper Penetration.

The Leaves of this Tree are winged like those of the Ash, having commonly 6 or 8 Pairs of Pinnæ (or Lobes) which are shorter and broader at their Base, than those of the Ash, where they adhere to the Midrib, by very short Foot Stalks; these Lobes are very smooth, having but one Vein running through each, which is always on one Side, so as to divide them unequally. We have

no perfect Account of the Flower of this Tree; those which are exhibited in Mr. *Catechy's Natural History*, were drawn from a withered imperfect Fragment, which were the only Remains of the Flowers, which could be found at the Time when he was there; but the Fruit he has delineated very exactly, as I have had an opportunity of comparing it with some which have been brought to England. The entire Fruit, before it opens, is of a brown Colour; these Fruit grow erect, upon long Foot Stalks, which closely adhere to the five cornered Column, running through the Middle of the Fruit, and to which the Seeds are fastened, lying *imbricatim*, like Slates on a House, over each other; so that when the Fruit is ripe, the outer Cover divides at the Bottom into five equal Parts, and when these fall off, and the Seeds are dispersed, the Foot Stalk and the Column remain some Months after on the Tree.

It is propagated by Seeds, which may be easily procured from the *Babama* Islands, from whence most of the good Seeds have been brought to England; for most of those sent from *Jamaica*, although brought in their Pods, have not succeeded, whereas those from the *Babama* Islands have grown as well as if they were immediately taken from the Trees; the Seeds should be sown in small Pots filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, giving them a gentle Watering once a Week; if the Seeds are good, the Plants will appear in a Month, or five Weeks, and when they are two Inches high, a sufficient Number of small Pots should be filled with light Earth, and plunged into the Tan Bed a Day or two, that the Earth may be warmed before the Plants are put into the Pots; then the young Plants should be shaken out of the Pots, and carefully separated, so as not to tear their Roots, and each planted in a single Pot, being careful to shade them till they have taken fresh Root, after which they must be treated in the same Manner as other tender Plants from the same Climate, being careful not to give them much Water, especially in Winter, also when they are shifted, to preserve the Earth about their Roots, otherwise they are very subject to perish; for in the Country where they grow naturally, they say it is not possible to remove these Trees, so as to live; if the Plants are properly managed, they will make considerable Progress; I have some Plants now in *Chelsea* Garden, near five Feet high, which are only three Years Growth from Seeds.

As the Wood of this Tree is now so generally used in England, it might surely be worthy the Care of the Planters in *America*, many of whom are possessed of barren rocky Lands, which at present produce no Profit, but if the Seeds of this Tree were sown there, might turn out greatly to the Advantage of their Successors, tho the present Possessors, should not live to enjoy the Profit.

The 3d Sort was discovered by the late Dr. *Houssoun*, at *Campeachy*, from whence he sent the Seeds to England, which succeeded in several Gardens; when he first observed these Trees, they were destitute of Leaves, but loaded with ripe Fruit; and on his second Visit to the Place, he found the Trees in full Verdure, but no Appearance of Flowers, so he was at a Loss to know what Genus it belonged to; but as the Fruit of the Trees agrees exactly with those of the two former Species, I have ventured to join it to them.

These Trees usually rise 80 Feet, or more, and di-

vide into many large Branches toward the Top, garnished with Leaves, somewhat resembling those of the Witch Hazel, but are broader at their Base, and cut angular at their Top; these are of an Ash Colour underneath, and are set on the Branches without any Order; the Fruit of this Tree is much larger than that of the *Babadoes* Cedar, being broad at the Base, and diminishing gradually to the Top, where it terminates in a Point, being upwards of two Inches long; this has also a Column, or woody Core, running Lengthways through the Fruit, to which the winged Seeds adhere as in the two former; but as both their Fruit are smooth on the Outside, this differs from them, in having five Angles running from the Base upward; at each Angle the Fruit, when ripe, separates, and exposes the winged Seeds, which are dispersed by the Winds.

We have no Account of the Wood of this Tree, whether it is used for Building, or other Purposes, as there have been few Persons of Curiosity in that Country, the Cutters of Logwood being the chief People who inhabit there, from whom there can be little known of the Produce. The Plants raised from Seeds in England, have made great Progress for the two first Years, but afterward were but slow of Growth; for, in six Years more, they did not shoot so much, as in the first Year from the Seed, when they grew more than three Feet high. I made several Trials to propagate the Trees by Cuttings and Layers, but without Success; so that by Seeds, seems to be the only Method of having them; these may be raised and managed as the two foregoing Sorts, and with them constantly kept in the Bark Stove.

CEDAR of BERMUDAS. See *Juniperus*.

CEDAR of CAROLINA. See *Juniperus*.

CEDAR of JAMAICA. See *Theobroma*.

CEDAR of LIBANUS. See *Larix*.

CEDARS of LYCIA, PHOENICIA and VIRGINIA. See *Juniperus*.

CEIBA. See *Bombax*.

CELASTRUS. *Lin. Gen. Plant.* 239. *Euonymoides*. *Isnard. Ac. R. Sc.* 1716. The Staff Tree.

The Characters are,

The Flower hath a small one leaved Empalement, cut into five unequal blunt Parts. The Flower hath five oval Petals, which are equal, and spread open. It hath five Stamens as long as the Petals, terminated by small Summits, and a small Germen with a large Receptacle, marked with ten deep Channels, supporting a short Style crowned with an obtuse trifid Stigma. The Germen afterward becomes an oval, blunt, three cornered Capsule, opening in three Cells, each containing an oval smooth Seed.

The Species are,

1. CELASTRUS *inermis, foliis ovatis integerrimis. Lin. Sp. Plant.* 196. Smooth Staff Tree with oval entire Leaves. This is the *Euonymus Virginianus rotundifolius, Capsulis Coccineis eleganter bullatis. Pluk. Alm.* 139. Round leaved *Virginia* Spindle Tree with scarlet Capsules, elegantly studded.

2. CELASTRUS *inermis, caule volubili. Lin. Sp. Plant.* 196. Smooth Staff Tree with a twining Stalk. This is the *Euonymoides Canadensis scandens foliis serratis. Isnard. Ac. Reg.* 1716. Climbing Canada Bastard *Euonymus* with sawed Leaves.

3. CELASTRUS *spinis nudis, ramis teretibus, foliis acutis.*

tis. Hort. Cliff. 72. Staff Tree with naked Spines, taper Branches, and pointed Leaves. This is the *Lycium Æthiopicum pyracanthæ foliis. Hort. Amst.* 1. p. 163. *Æthiopian Boxthorn* with *Pyracantha* Leaves.

4. *CELASTRUS spinis foliosis, ramis angulatis, foliis obtusis. Hort. Cliff.* 73. Staff Tree with Leaves on the Spines, angular Branches, and obtuse Leaves. *Lycium Portoricense, Buxi foliis angustioribus. Pluk. Alm.* 234. *Tab.* 202. f. 3. Boxthorn with narrow Box Leaves.

5. *CELASTRUS foliis oblongo-ovatis nervosis, alternis, floribus fasciculatis lateralibus.* Staff Tree with oblong, oval, nervous Leaves, placed alternate, and Flowers growing in Bunches from the Sides of the Branches. *Frutex lauri folio pendulo, fructu tricoeco, semine nigro splendente. Catseb. Hist. Carol. Vol. I.* The Red Wood.

The 1st Sort grows naturally in *Virginia*, and many Parts of *North America*, where it rises 8 or 10 Feet; but in *England* there are few of them more than Half that Height. It generally puts out two or 3 Stems from the Root, which divide upward into several Branches, covered with a brown Bark, and garnished with Leaves near three Inches long, and 2 broad, placed alternately on the Branches; the Flowers come out in loose Spikes at the End of the Branches; these are white, made up of five oval Petals, with a Germen in the Center, attended by five Stamina, when the Flowers fall off, the Germen swells to a 3 cornered Capsule, of a scarlet Colour, set full of small Protuberances; this opens in three Parts, each containing a hard oval Seed, covered with a thin red Pulp. This Shrub flowers in *July*, but rarely produce Seeds in *England*.

It is propagated by Layers, which will take Root in one Year; the young Branches only are proper for this Purpose, where there is not any of these near the Ground, the main Stalks should be drawn down, and fastened with Pegs to prevent their rising, and the young Shoots from them should be laid. The best Time for doing this is in Autumn, when they begin to cast their Leaves, and in 12 Months they will be sufficiently rooted, when they should be cut from the old Plant, and planted in a Nursery for a Year or two to get Strength, after which they must be removed to the Places where they are to remain. This Shrub grows naturally in moist Places, so will not thrive well in a dry Soil. It is very hardy, and bears the Cold of our Winters very well. It is also propagated by Seeds, which are frequently brought from *America*; but as these rarely arrive here time enough to sow before the Spring, the Plants never come up the first Year, therefore the Seeds may be sown either in Pots, or in a Bed of loamy Earth, keeping them clean from Weeds during the Summer, and those in the Pots should be placed in the Shade till Autumn, when the Pots should be plunged into the Ground in a warm Situation, or placed under a common Frame, to prevent the Frost from penetrating through the Side of the Pots; and if the Surface of the Ground, and Bed where the Seeds are sown, are lightly covered with some old Tan from a decayed hot Bed, it will secure the Seeds from being hurt by severe Frosts. In Spring the Plants will come up, which must be kept clean from Weeds, and, if the Season proves dry, they should have Water now and then, which will greatly forward their Growth. If the Plants make good

Progress the first Summer, they may be transplanted into a Nursery in Autumn, otherwise they should remain in the Seed Bed till the second Year, when they may be treated as the Layers.

The 2d Sort sends out several ligneous Stalks from the Root, which are flexible, and twist themselves about whatever Trees and Shrubs grow near them, or when they are at a Distance from such Support, they twine about each other, and rise to the Height of 12 or 14 Feet; but when they fasten themselves about Trees, they will grow much taller, but wherever this happens, their Branches girt the Trees so closely, as in a few Years will destroy them. These are garnished with oblong Leaves, about three Inches long, and near two broad, which are sawed on their Edges, and placed alternately on the Branches; they are of a lively green above, and paler on their under Side, having several transverse Nerves from the Middle to the Side. The Flowers are produced in small Bunches toward the End of the Branches, which are of an herbaceous Colour, composed of five roundish Petals; these are succeeded by roundish three cornered Capsules, which are red, and, when ripe, spread open in three Parts, disclosing the Seeds in the same Manner as our common Spindle Tree. This flowers about the Beginning of *June*, and the Seeds generally ripen well in *England* in Autumn. The Plants may be propagated from the Seeds, or by Layers, as the former Sort; it delights in a strong loamy Soil, rather moist than dry, and will grow in Woods among other Trees and Shrubs, where, when the Fruit is ripe, they make a pretty Appearance. It grows naturally all over *North America*, and is extremely hardy.

The 3d Sort is a Native of *Æthiopia*, from whence the Seeds were first brought to the Gardens in *Holland*, where the Plants were propagated, and have been since communicated to most of the curious Gardens in *Europe*. This rises with an irregular Stalk, about 3 or 4 Feet high, sending out several Side Branches, covered with brown Bark, and garnished with Leaves, about two Inches long, and more than Half an Inch broad, some of which are pointed, and others obtuse; they are stiff, of a lucid green, and come out irregularly from the Branches; these continue green thro' the Year. The Flowers are produced from the Side of the Branches, in loose Tufts, many of them arising from one Point, standing upon long Foot Stalks; they are of an herbaceous white Colour, composed of five Petals, which spread open, and five spreading Stamina, which surround a swelling Germen, supporting a tapering Style, crowned by an obtuse trifid Stigma; the Germen becomes an oval Fruit, of a fine red Colour, which opens in 3 Cells, containing one oblong hard Seed, the other two Cells being generally empty.

This Plant is commonly propagated by Cuttings in *Europe*, which is more expeditious than raising them from Seeds, because they rarely come up the first Year. The Cuttings may be planted any Time in Summer; but those which are planted early, will have more Time to get Strength before Winter. They should be planted in small Pots, which will contain 4 Cuttings in each; the Earth of a Kitchen Garden, well cultivated, is as good as any for this Purpose. The Pots should be then plunged into a moderate hot Bed, and shaded from the Sun

Sun every Day, and gently refreshed with Water now and then; when they have taken Root they must be gradually exposed to the open Air, placed in a sheltered Situation till they have obtained Strength, when they should be separated, and planted each in a small Pot filled with the same Earth, then placed in the Shade till they have taken fresh Root, after which they may be placed with other exoticks in a sheltered Situation till Autumn, when they must be housed with Myrtles, and require the same Treatment.

This is titled *African Barberry* by the ignorant; from the Resemblance of its Fruit to that of the Barberry.

The 4th Sort grows naturally at the *Cape of Good Hope*, from whence I received the Seeds. This rises 10 or 12 Feet, with a slender ligneous Stalk, covered with a light Ash-coloured Bark, and full of Joints, armed with long Spines, upon which grow many small Leaves; the Branches are slender, and armed with the same Spines at every Joint, but the whole Plant is so weak, as to require some Support, without which they would fall to the Ground. The Leaves come out in Clusters, without any order, shaped somewhat like those of the narrow Box Tree, but longer, and of a loose Texture; the Branches are angular, and when young their Bark is whitish. As I have not seen the Flowers of this Shrub, I can give no farther Description of it.

This rises very easily from Seeds, and the Plants make great Progress; for I have raised them 4 Feet high in two Years from Seeds, without any artificial Heat; and some of the Plants have lived through two Winters against a South-east Wall, but these have shed their Leaves in Winter, whereas those which were removed into the Green-house have retained their Verdure thro' the Year.

It may be propagated by Cuttings, which should be planted in Spring, and treated in the Manner directed for the former Sort; or if the young Shoots are laid, they will take Root in one Year, and may then be transplanted either into Pots, or against a good aspected Wall, where I find they will endure our ordinary Winters without any Protection; especially if they are covered in severe Frosts while young. Those in Pots will require a little Shelter in Winter, but should not be tenderly treated, for that will cause them to have weak Branches, nor will the Leaves have so much Verdure, as when they are exposed to the open Air in mild Weather.

The 5th Sort grows naturally in the *Babama* and some of the *Caribee* Islands, from whence I have several Times received the Seeds. This rises with a slender Stem, about 18 or 20 Feet high, sending out several weak Branches toward the Top, garnished with oblong oval Leaves, about 3 Inches long, and near 2 broad, having several transverse Nerves running from the Middle to the Side, and stand alternately on the Branches. The Flowers come out in Clusters from one Point, on the Side of the Branches, standing upon long slender Foot Stalks; these are small, white, and are succeeded by roundish 3 cornered Capsules, which have each one roundish, shining, black Seed. The Wood, when recently cut, is of a beautiful red Colour, but when exposed to the Air some Time, fades and becomes paler.

This is propagated by Seeds, which should be sown on a hot Bed in Spring, and when the Plants are fit to remove, they must be each transplanted into a small Pot,

filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, and shaded till they have taken fresh Root, then they must be treated as other tender Exoticks; in Autumn they must be removed into the Stove, plunging them into the Tan Bed. During the Winter Season they must have but little Water, and in Summer they should have a large Share of Air admitted to them, in warm Weather, but must constantly remain in the Stove. With this Management, I have raised these Plants 18 Feet high, which have flowered and ripened Seeds.

CELERY or SALARY. See Apium.

CELLS of Plants [of *Celle*, Lat.] are those Partitions or hollow Places in the Husks or Pods of Plants, in which the Seed is contained.

CELOSIA. *Lin. Gen. Plant.* 255. *Amarantus*. *Tourn. Inst. R. H.* 234. *Tab.* 118. *Amaranth*.

The Characters are,

The Empalement is permanent, and composed of three dry, coloured Leaves. The Flower hath five erect, sharp-pointed Petals, permanent, stiff, and shaped like a Flower Cup. It hath a small Nectarium joined to the Border of the Germen, to which adhere the five Stamina, terminated by turning Summits. The globular Germen supports an upright Style, as long as the Stamina, crowned with a single Stigma. The Empalement becomes a globular Capsule with one Cell opening horizontally containing roundish Seeds.

The Species are,

1. CELOSIA *foliis lanceolatis, pedunculis angulatis, spicâ ovata-oblongâ*. *Lin. Sp. Pl.* 205. *Celosia* with Spear-shaped Leaves, angular Foot Stalks, and an oval oblong Spike. *Amaranthus spicâ albescente habitiore*. *Martyn. Cent.* *Amaranthus* with a thick whitish Spike.

2. CELOSIA *foliis oblongo-ovatis, pedunculis teretibus substriatis, spicâ oblongâ*. *Lin. Sp. Pl.* 205. *Celosia* with oblong oval Leaves, taper striated Foot Stalks, and an oblong Spike. *Amaranthus cristatus*. *Camer. Epit.* Crested *Amaranth*, commonly called Cockscorn.

3. CELOSIA *foliis lanceolato-ovatis, paniculâ diffusâ filiformi*. *Flor. Virg.* 144. *Celosia* with oval Spear-shaped Leaves, and a slender diffused Panicle. This is the *Amaranthus paniculâ flavicante gracili holofericeâ*. *Sloan. Hist.* *Amaranth* with a slender silky yellowish Panicle.

The 1st Sort grows naturally in *America*, from whence I have frequently received the Seeds. This rises with an upright Stalk about two Feet high, which is garnished with long Spear-shaped Leaves ending in Points, of a pale Colour; those on the lower Part being 4 or 5 Inches long, and one and a Half broad in the Middle, but they diminish gradually in their Size upward. Toward the upper Part of the Stalk, there are a few Side Branches sent out which stand erect; each of which is terminated by a slender Spike of Flowers, and the principal Stalk is terminated by one which is much larger; this is two or three Inches long, and about as thick as a Man's middle Finger, the whole Spike being of a silvery Colour. But there is a Variety of this, with slender pyramidal Spikes, intermixed with red toward the Top, the Seeds of which I received from Dr. *Linnaeus*, by the above Title, but I am inclinable to think it is different from that which was figured by Dr. *Martyn* in his *Decades* of rare Plants, which I have cultivated many Years in the *Chelsea* Garden, and have never found it vary. The Spike

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of this is much thicker than that of *Linneus's*, and is of equal Size the whole Length, whereas his diminishes almost to a Point at the Top, and the Colour of both are very different; but as I have had but one year's Trial of *Linneus's*, so I cannot tell how that may alter in Time. This Sort is annual like the other *Amaranths*, and requires the same Culture.

The 2d Sort is well known, by its common Appellation of Cockscorn; which was given to it from the Form of its crested Head of Flowers, resembling a Cockscorn; of this there are many Varieties, which differ in their Form, Magnitude and Colours; but as they vary from Seeds, are not enumerated as distinct Species. I have raised great Varieties of these from Seeds which came from *China*, but have generally found them alter in a few Years, notwithstanding great Care has been taken, in the saving their Seeds: The principal Colours of their Heads are red, purple, yellow, and white; but I have had some, whose Heads have been variegated with 2 or 3 Colours. I also raised some from Seeds which I received from *Persia*, whose Heads were divided like a Plume of Feathers, which were of a beautiful scarlet Colour; but these in a few Years degenerated: Therefore I shall include all the different Varieties of Cockscorn, under this general Title.

The Seeds of the 3d Sort were sent me from *Jamaica*. This grows naturally in most of the Sugar Islands: It rises with a weak Stalk near 4 Feet high, garnished with oblong pointed Leaves, standing opposite at each Joint, and pretty far asunder. The Flowers come out in loose Panicles from the Side of the Stalks, and at the End of the Branches: These are divided into a great Number of very slender Spikes, of a pale yellow, shining with a gloss like Silk. The Plants of this perished in Autumn, without perfecting their Seeds.

In order to have large fine *Amaranths*, great Care should be taken in the Choice of the Seeds, for if they are not carefully collected, the whole Expence and Trouble of raising them will be lost. When you are provided with good Seeds, they must be sown on a hot Bed (which should have been prepared a few Days before, that the violent Heat may be abated) about the Beginning of *March*; and in about a Fortnight's time (if the Bed is in good Temper) the Plants will rise; but as they are tender when they first appear, so they require great Care for a few Days till they get Strength; first, in giving them a due Proportion of Air, to prevent their drawing up weak, and next, to keep them from Moisture; for a small Share of Moisture will cause their tender Stems to rot: In sowing the Seeds, care should be taken not to put them too close, for when the Plants come up in Clusters, they frequently spoil each other, for want of Room to grow: In a Fortnight or three Weeks time, the Plants will be fit to remove, when you must prepare another hot Bed, covered with good rich light Earth, about 4 Inches thick; which should be made a few Days, that it may have a proper Temperature of Heat; then raise up the young Plants with your Finger, so as not to break off the tender Roots, and prick them into your new hot Bed about 4 Inches Distance every Way, giving them a gentle Watering to settle the Earth to their Roots: But in doing this, be very cautious not to bear the young Plants down to the Ground by

hasty watering, which rarely rise again, or at least so as to recover their former Strength in a long Time, but very often rot in the Stems, and die quite away.

After the Plants are transplanted, they must be screened from the Sun till they have taken fresh Root; but as there is generally a great Steam rising from the Fermentation of the Dung, which condenses on the Glasses, and dropping on the Plants, very frequently destroys them; so the Glasses should be frequently turned in the Day-time, whenever the Weather will permit; but if the Weather happens to prove bad, that you cannot turn your Glasses, it will be of great Service to your Plants, to wipe off all the Moisture 2 or 3 Times a Day with a woollen Cloth. When your Plants are firmly rooted, and begin to grow, you must observe to give them Air every Day (more or less, as the Weather is cold or hot) to prevent their drawing up too fast, which greatly weakens their Stems.

In about three Weeks or a Month these Plants will have grown so as to meet, and will stand in need of another hot Bed, which should be of a moderate Temper, and covered with the same rich Earth about six Inches thick, in which they should be planted (observing to take them up with as much Earth about their Roots as possible) at 7 or 8 Inches Distance every Way, giving them some Water to settle the Earth about their Roots; but be very careful not to water them heavily, so as to bear down the Plants, and keep them shaded in the Heat of the Day, until they have taken fresh Roots, and be sure to refresh them often (but gently) with Water, and give them Air in Proportion to the Heat of the Weather, covering the Glasses with Mats every Night, lest the Cold chill your Beds, and stop the Growth of the Plants.

In the Beginning of *May* you must provide another hot Bed, which should be covered with a deep Frame, that your Plants may have Room to grow: Upon this hot Bed, you must set as many three-penny Pots as can stand within the Compass of the Frame; these Pots must be filled with good rich Earth, and the Cavities between each Pot filled up with any common Earth, to prevent the Heat of the Bed from evaporating, and filling the Frame with noxious Steams; then, with a Trowel, or some such Instrument, take up your Plants (from the former hot Bed) with as much Earth as possible to the Roots, and Place each single Plant in the Middle of one of the Pots, filling the Pot up with the Earth before described, and settle it close to the Root of the Plant with your Hands; water them gently, as before, and shade them in the Heat of the Day from the Violence of the Sun, by covering the Glasses with Mats; refresh them often with Water, and give them a good Quantity of Air in the Day-time.

In about 3 Weeks more, these Plants will have grown to a considerable Size and Strength, so that you must now raise the Glasses very much in the Day-time; and when the Air is soft, and the Sun clouded, draw off the Glasses, and expose them to the open Air, and repeat this as often as the Weather will permit, which will harden them by Degrees, to be removed abroad into the Places where they are to remain the whole Season: But it is not advisable to set these out, until a Week in *July*, observing

to do it when the Air is perfectly soft, and if possible, in a gentle shower of Rain.

Let them at first be set near the Shelter of a Hedge for 2 or 3 Days, to screen them from the Violence of the Sun, and strong Winds, to which they must be inured by Degrees: These Plants, when grown to a good Stature, perspire very freely, and must be every Day refreshed with Water, if the Weather proves hot and dry, otherwise they will stunt, and never produce their Plumes so fine as they would do if taken care of.

This is the proper Management to have fine Amaranths; which, if rightly followed, and the Kinds are good, in a favourable Season, will produce wonderful large fine Flowers, and are the greatest Ornament to a good Garden for upwards of two Months: By this Method, I have had Plants 5 or 6 Feet high, with Crests near a Foot in Breadth; and I am persuaded, if the Kind is good, (and no Want of Dung, or Conveniencies) in a kindly Season, they will grow much larger.

In the Beginning of September, the Amaranths will have formed their Seeds, when you must make Choice of the largest; most beautiful, and least branching Plants of each Kind for Seed; which you should remove under Shelter, (if the Weather proves wet, or the Nights frosty) that the Seeds may be maturely ripened; in the Choice, be sure never to take any Seeds from Side Branches, nor the Neck of the Plume, but such only as are produced in the Middle thereof, which in many Plants, perhaps, may be but a small Quantity; but I do assure you, it is those only you can depend upon, to have your Kinds good the succeeding Year.

CELSIA. Lin. Gen. Plant. 675. *Verbascum*. Tourn. Inst. R. H. 146. This Name was given to this Plant in Honour of Dr. Olaus Celsus, Professor of Philosophy and Theology in the University of Upsal, in Sweden, by Dr. Linnaeus. We have no English Name for it.

The Characters are,

It hath an obtuse permanent Empalement, which is as long as the Petals, divided at the Top into five Parts. The Flower is of one Leaf, with a very short Tube, spread open above, and cut into five unequal Parts; the two upper being small, and the under larger. It hath four hairy Stamina, which incline toward the upper Segments of the Petal, two of which are longer than the Petal, and two are of the same Length, terminated by small roundish Summits. In the Center is situated a roundish Germen, supporting a slender Style, crowned by an obtuse Stigma. The Germen afterward becomes a roundish Capsule compressed at the Top, sitting upon the Empalement, and hath two Cells which are filled with small angular Seeds.

There is but one Species of this Genus known, viz.

CELSIA foliis duplicato-pinnatis. Hort. Cliff. 321. *Celsia* with double winged Leaves. This is the *Verbascum orientale* *Sophia folio*. Tourn. Cor. 8. Eastern Mullein with a Flixweed Leaf.

This Plant grows naturally in Armenia, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris, where they succeeded, and it hath been since communicated to most Parts of Europe. In its natural Place of Growth, this is an Annual, but in England it will rarely ripen its Seeds, unless the Plants come up in Autumn and live through the Winter.

It sends out many, oblong Leaves, finely divided almost

to the Mid-rib on both Sides; these lie flat on the Surface of the Ground, and from the Center arises a roundish herbaceous Stalk near two Feet high, garnished the whole Length with Leaves of the same Shape, but diminishing in their Size gradually to the Top: These are placed alternately, and at the Foot Stalk of each, come out the Flowers, more than Half the Length of the Stalk, which are of an Iron Colour on their Outside, but pale yellow within, spreading open like those of the common *Mullein*, but not so regular; the short Tube being turned downward, and the lower Segments being larger than the upper, and the Stamina being unequal, has occasioned *Linnaeus* to remove it to his ringent Flowers. The Seed Vessel is round, compressed, and hath two Cells filled with small Seeds. It flowers in June, and the Seeds ripen in September: If the Seeds are sown on a warm dry Border as soon as they are ripe, the Plants will come up and live through the Winter, provided the Soil is poor, for in rich Ground they are apt to grow rank, and then they are generally destroyed by the early Frosts, or rot with much wet. When the Plants come up, they require no other Care but to keep them clean from Weeds, and thin them if too close; for they do not bear removing well, so should be sown where they are intended to remain.

I have, sometimes when the Seasons have proved warm, had ripe Seeds from Plants sown in the Spring; but this cannot be depended on, therefore it is much better to raise the Plants in Autumn.

CELTIS Tourn. Inst. Lin. Gen. Pl. *Lotus Arbor. Raij. Metb.* The Lote or Nettle Tree, in French *Microcoulir*.

The Characters are,

It hath male and hermaphrodite Flowers on the same Tree: The hermaphrodite Flowers are single, and situated above the male. The Empalement of the hermaphrodite Flower is divided into five Parts, in which there are no Petals, but 5 short Stamina terminated by thick quadrangular Summits, which have 4 Furrows. In the Center is situated an oval Germen, supporting 2 reflexed Styles crowned by a single Stigma. The Germen becomes a round Berry with one Cell, inclosing a roundish Nut. The male Flowers have their Empalements divided into six Parts, and no Germen or Style, but in other Parts like the hermaphrodite.

The Species are,

1. CELTIS foliis lanceolatis acuminatis, serratis, nervosis. Nettle Tree with Spear-shaped pointed Leaves, which are veined and sawed on their Edges. *Celtis fructu nigricante*. Tourn. Inst. 612. Lote Tree with a black Fruit.

2. CELTIS foliis oblique-ovatis, serratis, acuminatis. Lin. Sp. Plant. 1044. Nettle Tree with oblique, oval Leaves, which are pointed and sawed on their Edges. This is the *Celtis fructu obscure purpurascente*. Tourn. Inst. R. H. 612. Lote Tree with a dark purple Fruit.

3. CELTIS foliis ovato-cordatis, denticulatis, petiolis brevibus. Nettle Tree with oval Heart-shaped Leaves, slightly indented, and short Foot Stalks. This is the *Celtis orientalis minor, foliis minoribus & crassioribus, fructu flavo*. Inst. Cor. 42. Smaller Eastern Lote Tree, with smaller and thicker Leaves, and a yellow Fruit.

4. CELTIS foliis oblongo-ovatis, obtusis, nervosis, superne glabris, subtus aureis. Nettle Tree with oblong, oval obtuse, nervous Leaves, which are smooth on their

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upper

upper Surface, and of a Gold Colour beneath. This is the *Celtis foliis Citrii subtilis aureo, fructu rubro. Plum. Cat.* 18. Lote Tree with Citron Leaves, of a Gold Colour on their under Side, and a red Fruit.

The 1st Sort grows naturally in the South of France, in Spain and Italy, where it is one of the largest Trees of those Countries: Yet this is not so plenty in England as the 2d, nor do I remember to have seen but two large Trees of this Sort in the English Gardens; one of which was formerly growing in the Bishop of London's Garden at Fulham, but was cut down some Years past, with many other curious exotick Trees, which were there growing in great Perfection: The other was in the Garden of Dr. Uvedale at Enfield, which was standing a few Years ago, when I paid a Visit to that Place; it had frequently produced Fruit, but was never propagated in this Country; nor were there any young Plants in the Gardens, till about 8 Years ago, when I procured some of the Fruit from Italy, which I communicated to several of my Friends.

This Tree rises with an upright Stem, to the Height of 40 or 50 Feet, sending out many slender Branches upward, which have a smooth dark coloured Bark, with some Spots of gray; these are garnished with Leaves placed alternately, near 4 Inches long, and 2 broad in the Middle, ending in long sharp Points, and deeply sawed on their Edges; having several transverse Veins, which are prominent on their under Side. The Flowers come out from the Wings of the Leaves all along the Branches; they have a male and an hermaphrodite Flower, generally at the same Place, the male Flowers being situated above the others: These have no Petals but a green herbaceous Empalement, so make no Figure; they come out in Spring, at the same time the Leaves make their first Appearance; and generally decay before the Leaves have grown to half their Magnitude. After the Flowers are past, the Germen of the hermaphrodite Flowers, becomes a round Berry about the Size of a Pea, which, when ripe, is black.

The 2d Sort grows naturally in North America: It delights in a moist rich Soil, in which it becomes a very large Tree. This rises with a strait Stem, which in young Trees is smooth, and of a dark Colour, but as they advance it becomes rougher and of a lighter Colour. The Branches are much diffused on every Side, garnished with oblique, oval Leaves, ending in long Points, and sawed on their Edges; they are placed alternately on the Branches, with pretty long Foot Stalks. The Flowers come out opposite to the Leaves, upon long Foot Stalks; the male Flowers standing above the hermaphrodite as in the other Species; after these decay, the hermaphrodite Flowers are succeeded by roundish Berries, which are smaller than those of the first Sort, and when ripe, are of a dark purple Colour. This Tree flowers in May, and the Seeds ripen in October. Of this Sort there are several large Trees in the English Gardens, some of which produce great Quantities of Fruit annually, which in favourable Seasons come to Maturity, so that from their Seeds Plants have been raised; and there are few Years, in which there is not Fruit of this Sort sent from America, whereby it is now become common in the English Nurseries.

This Tree is late in putting out in Spring, continues

as long in Beauty in Autumn, for it is the latest in fading, of any of the deciduous Trees; nor do the Leaves alter their Colour long before they fall, but continue in full Verdure, till within a few Days of their dropping off; and, so soon as they begin to fall, the Trees will in few Days be quite destitute of Leaves, so that the Litter which their Leaves occasion, may be sooner cleared away, than that of any other deciduous Tree. There is little Beauty of the Flowers or Fruit of this Tree; but, as the Branches are well clothed with Leaves, of a fine green Colour, the Trees, when mixed with others in Wildernesses, make a pleasing Variety during the Summer Season. The Wood being tough and pliable, is esteemed by Coachmakers for the Frames of their Carriages.

The 3d Sort was discovered by Tournesfort in Armenia, who sent the Fruit to the Royal Garden at Paris where they succeeded, and the Trees there raised, have produced Fruit for several Years, so that most of the curious Gardens in Europe have been furnished with it from thence.

It rises with a Stem about 10 or 12 Feet high, dividing into many Branches, which spread horizontally on every Side, and have a smooth greenish Bark; they are garnished with Leaves about an Inch and a Half long, and near an Inch broad, inclining to a Heart-shape, but are oblique, one of the Ears of the Base being smaller and lower than the other; they are of a thicker Texture than those of the common Sort, and of a paler green; they are placed alternate on the Branches, and have short Foot Stalks; the Flowers come out from the Foot Stalks of the Leaves, as the former, and are succeeded by oval yellow Berries, which, when fully ripe, turn of a darker Colour. The Wood is very white.

These Trees are propagated by Seeds, which should be sown soon after they are ripe, when they can be procured at that Season; for these frequently come up the following Spring: whereas those which are sown in the Spring will not come up till 12 Months after; therefore it is the best way to sow them in Pots or Tubs, that they may be easily removed; for those which are sown in the Spring, should be placed in the shade in Summer, and constantly kept clean from Weeds; but in Autumn they should be placed in a warm Situation, plunging the Pots into the Ground, and if they are covered over with a little Tan from a decayed hot Bed, it will prevent the Frost from penetrating the Earth to injure the Seeds; if these Pots are placed on a gentle hot Bed, it will greatly forward the Vegetation of the Seeds, whereby the Plants will have more Time to get Strength before the Winter: But when the Plants appear above Ground they must have a large Share of Air, otherwise they will draw up weak; and as soon as the Weather is warm, they must be exposed to the open Air; and, in Summer, they must be constantly kept clean from Weeds; if the Season proves dry, they will require Water two or three times a Week. In Autumn it will be proper to remove the Pots, and place them under a hot Bed Frame, to shelter them from severe Frost; or where there is not that Conveniency, the Pots should be plunged into the Ground, near a Wall or Hedge; as the Plants, when young, are full of Sap, and tender, the early Frosts in Autumn frequently kill the upper Part of their Shoots; there-

therefore they should be either covered with Mats, or a little Straw or Peas Haulm laid over them.

The following Spring the Plants should be taken out of the Seed Pots, and planted in the full Ground: This should be done about the Middle or latter End of March, when the Danger of the Frost is over; therefore a Bed or two should be prepared (according to the Number of Plants raised) in a sheltered Situation; and, in a gentle loamy Soil. The Ground must be well trenched, and cleared from the Roots of bad Weeds, and when levelled, should be marked out in Lines at a Foot Distance; then the Plants should be carefully turned out of the Pots, and separated, so as not to tear their Roots, and planted in the Lines at 6 Inches asunder, pressing the Earth down close to the Roots. If the Ground is very dry when they are planted, and no Appearance of Rain, it will be proper to water the Beds, to settle the Earth to the Roots; and after this, if the Surface is covered with some old Tan, or rotten Dung, it will keep the Ground moist, and prevent the drying Winds from penetrating to the Roots of the Plants.

The following Summer it will be necessary to keep them constantly clean from Weeds; but after the Plants are established in the Ground, they will not require any Water, especially toward the latter Part of Summer, for that will occasion their late Growth, whereby they will be in great Danger of suffering by the Autumn Frosts; for the more any of these young Trees are stopped in their Growth by Drought towards Autumn, the firmer will be their Texture, so better able to bear the Cold.

The Plants may remain in these nursery Beds, two Years, by which Time they will have obtained sufficient Strength to be transplanted where they are designed to remain, because these Plants extend their Roots wide every Way, so that if they stand long in the Nursery, their Roots will be cut in removing, which will be a great Prejudice to their future Growth.

These Sorts are hardy enough to thrive in the open Air in England, after they are become strong; but for the two first Winters after they come up from Seeds, they require a little Protection, especially the 3d Sort, which is tenderer than either of the former. The young Plants of this Sort frequently have variegated Leaves, but those are more tender than the plain leaved.

The 4th Sort was first discovered by Plumier, in the French Islands; it was also found in Jamaica, by Dr. Houstoun, who sent the Seeds to England. This rises with a strait Trunk, near 20 Feet high covered with a gray Bark, divided into many Branches upward, which are garnished with Leaves near 4 Inches long, and two and a Half broad, rounded at their Extremity, of a thick Texture, very smooth on their upper Surface, and on their under Side of a lucid Gold Colour, placed alternately on the Branches. The Fruit is round and red, but the Flowers I have not seen.

The Seeds of this Sort rarely come up the first Year, so should be sowed in Pots, and plunged into the Tan Bed in the Stove, and remain till the Plants come up. These Plants must be constantly kept in the Bark Stove, and treated as other tender Exotics.

CENTAUREA. Lin. Gen. Plant. 880. *Centaureum majus*. Tourn. Inst. Jacea Tourn. 443. *Cyanus* Tourn. 445. Greater Centaury, Knapweed, Blue Bottle, &c.

The Characters are,

It hath a compound Flower, whose Disk is composed of many hermaphrodite Florets, and the Border or Rays of female Florets, which are larger and looser: these are included in a common, roundish, scaly Empalement; the hermaphrodite Florets have narrow Tubes, swelling at the Top, and cut into five Parts; these have five short hairy Stamina, terminated by cylindrical Summits: The Germen is situated under the Petal, supporting a slender Style, crowned with an obtuse Stigma. The Germen becomes a single Seed shut up in the Empalement. The female Florets have a slender Tube, but expands above, where it is enlarged, and cut into five unequal Parts; these are barren.

The Species are,

1. *CENTAUREA calycibus inermibus globosis, squamis mucronatis, foliis pinnatis decurrentibus subtus argenteis*. Centaury with a globular Empalement without Spines, sharp pointed Scales, and winged running Leaves white underneath. This is the *Centaureum foliis cinaræ*. Cornut. 72. Centaury with Artichoke Leaves.

2. *CENTAUREA calycibus inermibus, squamis ovatis obtusis, foliis pinnatis glabris integerrimis*. Hort. Cliff. 421. Centaury with an Empalement without Spines, oval obtuse Scales, and smooth winged Leaves, which are entire. This is the *Centaureum alpinum luteum*. C. B. P. 117. Yellow alpine Centaury.

3. *CENTAUREA calycibus inermibus, squamis ovatis, foliis pinnatis, foliolis serratis decurrentibus*. Hort. Cliff. 421. Centaury with an Empalement without Spines, oval Scales, and winged Leaves, whose Lobes are sawed, and run along the Mid-rib. This is the *Centaureum majus, folio in laciniis plures diviso*. C. B. P. 117. Greater Centaury with a Leaf divided into many Parts.

4. *CENTAUREA calycibus squamosis, foliis indivisis integerrimis decurrentibus*. Hort. Cliff. 121. Centaury with a scaly Empalement, and undivided entire Leaves, running along the Stalks. This is the *Centaureum majus orientale erectum, glastri folio, flore luteo*. Tourn. Cor. 32. Com. rar. Plant. 39. Upright, Eastern, greater Centaury with a woad Leaf, and a yellow Flower.

5. *CENTAUREA calycibus ciliatis oblongis, foliis pinnatifidis linearibus integerrimis*. Prod. Leyd. 140. Centaury with oblong hairy Empalements, and winged pointed Leaves, which are very narrow, and entire. *Stæbe incana, cyano similis tenuifolia*. C. B. P. Hoary Stæbe with the Appearance of Blue Bottle, and a narrow Leaf.

6. *CENTAUREA calycibus squamosis, foliis tomentosis, radicalibus lanceolatis, caulinis pinnatifidis caule simpliciter*. Prod. Leyd. 142. Centaury with a scaly Empalement, woolly Leaves, those near the Root being Spear shaped, those on the Stalk pointed, and a single Stalk. This is the *Centaureum majus incanum, humile, capite pini*. Tourn. Inst. R. H. 469. Dwarf, hoary, greater Centaury, with a Head like a Pine Cone.

7. *CENTAUREA calycibus serratis, foliis lanceolatis decurrentibus, caule simplicissimo*. Hort. Cliff. 422. Centaury with sawed Empalements, Spear-shaped running Leaves, and a single Stalk. This is the *Cyanus montanus latifolius*. f. *Verbasculum Cyanoides*. C. B. P. 273. Greater Mountain Blue Bottle with broad Leaves.

8. *CENTAUREA calycibus serratis, foliis lineari-lanceolatis decurrentibus, caule simpliciter*. Centaury with sawed Empalements, very narrow Spear-shaped running Leaves, and

and a single Stalk. This is the *Cyanus angustiore folio* & *longiore Belgicus*. H. R. Par. Narrower and longer leaved Belgick Blue Bottle.

9. *CENTAUREA calycibus inermibus, subrotundis glabris, squamis ovatis, foliis sinuatis*. Hort. Cliff. 421. Centaury with unarmed, roundish, smooth Empalements, oval Scales, and sinuated Leaves. This is the *Cyanus floridus odoratus*, *Turcicus sive orientalis major*. Park. Sweet oriental Cyanus, commonly called Sweet Sultan.

10. *CENTAUREA calycibus inermibus, subrotundis, glabris, squamis ovatis obtusis, foliis laciniatis ferratis*. Centaury with roundish, smooth, unarmed Empalements, oval obtuse Scales, and cut Leaves, which are sawed on their Edges. This is the *Cyanus orientalis flore luteo fistuloso*. Ac. R. Par. 75. Eastern Cyanus with a yellow fistular Flower, commonly called yellow sweet Sultan.

11. *CENTAUREA calycibus ferratis, foliis linearibus integerrimis, infimis dentatis*. Hort. Cliff. 422. Centaury with sawed Empalements, very narrow entire Leaves, indented below. This is the *Cyanus segetum*. C. B. P. 273. Corn Blue Bottle.

12. *CENTAUREA calycibus inermibus, squamis mucronatis, foliis pinnatifidis obtusis decurrentibus*. Lin. Sp. Plant. 910. Centaury with unarmed Empalements, having pointed Scales, and winged pointed Leaves, which are obtuse, running along the Stalk. *Cyanus Aegypticus flore parvo purpureo, caule alato*. D. Lipp. Egyptian Cyanus with a small purple Flower, and a winged Stalk.

13. *CENTAUREA calycibus ciliatis terminali-seffilibus, foliis tomentosis pinnatifidis, lacinulis linearibus*. Hort. Cliff. 422. Centaury with hairy Empalements, closely terminating the Stalks, woolly Leaves with winged Points, and the Segments very narrow. This is the *Jacea montana candidissima, Stabes foliis*. C. B. P. 273. White Mountain Knapweed with a Stæbe Leaf.

14. *CENTAUREA calycibus ciliatis, foliis tomentosis pinnatifidis, foliolis obtusis ovatis integerrimis exterioribus majoribus*. Hort. Cliff. 422. Centaury with hairy Empalements, woolly Leaves with winged Points, the small Leaves oval and obtuse, the outer larger. This is the *Jacea arborea argentea Ragusina*. Zan. Hist. 107. Silvery Tree Knapweed of Ragusa.

15. *CENTAUREA calycibus palmato-spinosis setis aequalibus, foliis decurrentibus sinuatis spinulosis*. Prod. Leyd. 141. Centaury with palmated spinous Empalements, whose Bristles are equal, and sinuated prickly Leaves running along the Stalks. This is the *Jacea cyanoides altera, alato caule*. Herm. Par. 189. Another Knapweed like Cyanus, with a winged Stalk.

16. *CENTAUREA calycibus squamosis, foliis ovato-oblongis denticulatis integris petiolatis: Subtus tomentosis*. Hort. Cliff. 421. Centaury with scaly Empalements, oval, oblong, indented entire Leaves, having Foot Stalks, and woolly underneath. This is the *Centaureum majus, folio belenii incano*. Tourn. Inst. 449. Greater Centaury with a white Elecampane Leaf.

17. *CENTAUREA calycibus setaceo-spinosis, foliis lanceolatis petiolatis, inferne dentatis*. Hort. Cliff. 423. Centaury with bristly prickly Empalements, Spear-shaped Leaves, with Foot Stalks, indented beneath. This is the *Centaureum majus folio molli acuto laciniato, flore aureo magno, calyce spinoso*. Boerb. Ind. alt. 1. p. 144. Greater Centaury with a soft, pointed, cut Leaf, and a large golden Flower, with a prickly Empalement.

18. *CENTAUREA calycibus squama-ciliatis, foliis pinnatifidis, pinnis lanceolatis*. Lin. Sp. Plant. 913. Centaury with hairy Scales to the Empalement, wing-pointed Leaves, whose Lobes are Spear-shaped. This is the *Cyanus foliis radicalibus partim integris, partim pinnatis, bractea calycis ovali, flore sulphureo*. Hall. Aët. Phil. 1745. Cyanus whose lower Leaves are partly entire, and part winged, an oval Bractea to the Empalement, and a Sulphur-coloured Flower.

19. *CENTAUREA calycibus squamosis obtusis, foliis pinnatifidis linearibus integerrimis*. Centaury with an obtuse squamous Empalement, and wing-pointed, narrow, entire Leaves.

20. *CENTAUREA calycibus ciliatis, foliis pinnatifidis brevibus, caule paniculato*. Centaury with hairy Empalements, very short wing-pointed Leaves, and a paniculated Stalk. This is the *Jacea orientalis perennis angustissima* & *incano coronopi folio, flore purpurascete*. Tourn. Car. 32. Eastern perennial Knapweed, with a narrow, hoary Buckhorn Leaf, and purplish Flower.

There are many other Species of this Genus, preserved in Botanick Gardens for Variety, some of which grow naturally in England, and are often troublesome Weeds in the Fields, so do not deserve a Place in Gardens; therefore I chose not to trouble the Reader with mentioning their Titles; but have here selected those Species, which have some Beauty to recommend them.

The 1st Sort grows naturally on the *Apenine* Mountains. This hath a perennial Root, which strikes many strong Roots deep in the Ground: These greatly resemble those of the Artichoke, as doth also the lower Leaves, which are green on their upper Side, and hoary underneath; the Stalks rise about three Feet high, garnished with Leaves of the same Form and Colour as those below, but much smaller. The upper Part of the Stalk branches out into three or four Divisions, each being terminated with a large single Head of Flowers, of a purple Colour; these are composed of many hermaphrodite Flowers, which form the Disk in the Center, and a Border of female Flowers which compose the Rays; and are all included in a common scaly Empalement, whose Scales terminate in acute Points. It flowers in June and July; but unless the Season is very warm and dry, there are no good Seeds produced in this Country. This is usually propagated by parting their Roots: The best Time for doing this is early in *October*, that the Plants may have Time to take Root before the Frost comes on. These Roots must not be removed or parted oftener than every 4th Year, if they are designed to produce strong Flowers; they should be planted in a dry Soil, because Wet in Winter will cause them to rot. This Plant is never injured by Frost, so may be fully exposed in open Borders; but the Roots will require to have three Feet to spread, so they must not be planted too near other Plants.

The 2d Sort grows naturally on the *Alps*. This hath also a perennial Root, which strikes deep into the Ground, sending out a great Number of long winged Leaves, smooth, entire, and of a glaucous Colour; the Stalks rise near four Feet high, and divide upward into many Parts, garnished with small Leaves of the same Form as the lower; each of these Stalks is terminated by a single Head of yellow Flowers, of the same Form with those of the first, but not more than half their Size; this also flowers

at the same Time, and in dry Seasons will perfect Seeds in Autumn. It may be propagated by parting the Roots as the first; the Plants require the same Treatment.

The 3d Sort stands in the List of medicinal Plants of the College, but is very rarely used; the Root is reckoned astringent, and good for all Kinds of Fluxes, and of great use to heal Wounds. This grows naturally on the Mountains in *Italy* and *Spain*; it hath a strong perennial Root, like the two former Sorts, from which come out a great Number of long winged Leaves, which spread wide on every Side; these are of a lucid green, and sawed on their Edges; the Flower Stalks are slender, but very stiff, and divide upward into many smaller, which rise five or six Feet high, having at each Joint, one small winged Leaf, of the same Form with the other: Each of these Stalks is terminated by a single Head of purplish Flowers, which are considerably longer than the Empalement. This Sort flowers in *July*, and in warm dry Seasons will produce ripe Seeds in *England*. It may be propagated by parting the Roots as the former Sort, and the Plants treated the same way, but should have more Room to grow; therefore not so proper for small Gardens; but in large open Borders, or to intermix in open Quarters with other tall growing Plants, this will make a Variety.

The 4th Sort was discovered by *Tournefort*, in the *Levant*, who sent the Seeds to the Royal Garden at *Paris*, and from thence it hath been communicated to most of the curious Gardens in *Europe*. This hath a perennial Root, which strikes deep into the Ground, from which springs up a great Tuft of long entire Leaves, shaped like those of *Woad*, and grow upright; there are also many upright Stalks, which rise near five Feet high, garnished with Leaves coming out single at each Joint, of the same Shape as the under, but less, and have a Border or Wing, running along the Stalk from one to the other. The upper part of the Stalk divides into two or three smaller, each of which is terminated by a single Head of yellow Flowers, included in a silvery scaly Empalement. This flowers in *July*, but rarely produces good Seed in *England*. It may be propagated by parting the Roots as the former, and the Plants treated the same way, being equally hardy; as this doth not spread so much as the two last, it may be allowed a Place in smaller Gardens.

The 5th Sort grows naturally in *Austria*. This hath a perennial Root, from which come out in Spring, many winged Leaves, which are hoary, and the Segments narrow and entire; the Stalks rise near three Feet high, dividing into several Branches, which have a single winged Leaf at each Joint, of the same Shape with the other; at the End of each Stalk is one Head of purple Flowers, inclosed in an oblong scaly Empalement, each Scale being bordered with small Hairs, like an Eye Brow. The Flowers appear in *June*, and the Seeds ripen in *August*. This is propagated by Seeds, which may be sown in a Bed of common Earth, in a Nursery; and when the Plants come up, they must be thinned, and kept clear from Weeds, and the following Autumn may be transplanted where they are designed to remain; after which they require no further Care. Two or three of these Plants may be allowed a Place in Gardens where there is Room, for the Sake of Variety.

The 6th Sort grows naturally in the South of *France*, and in *Italy*: I received the Seeds from *Verona*. It hath

a perennial Root, which doth not divide and spread as the former, but grows single, sending out, in the Spring, several entire Spear-shaped Leaves, and afterward a single Stalk, more than a Foot high, which is garnished at each Joint with one divided hoary Leaf; and at the Top comes out a single, large, scaly Head, shaped like a Cone of the Pine Tree, very taper at the Top, where it closely surrounds the Florets, whose Tops just peep out of the Empalement: They are of a bright purple Colour, and appear in *June*, but are not succeeded by Seeds in *England*, so cannot be propagated, unless the Seeds are procured from abroad. These Seeds may be sown, and the Plants afterward treated as the last.

The 7th Sort is the common perennial Blue Bottle, by some titled Batchelors Button. This is so well known as to need no Description; the Roots creep under Ground, to a great Distance, whereby the Plant propagates too fast, and is often troublesome in Gardens. It flowers in *May* and *June*, and grows in any Soil or Situation.

The 8th Sort differs from the 7th in having much longer and narrower Leaves, not so white, and the Heads of Flowers are smaller; but whether this is only a Variety from the other, I cannot determine, having never raised either from Seeds; for these Plants spread very much by their creeping Roots, which renders them barren, as many other creeping rooted Plants are, few of which produce Seeds: However, this Plant has always retained its Difference, from the Year 1727, when I first brought it to *England*; and as it propagates so fast, it is now become almost as plenty in the Gardens, as the common broad leaved Sort. This is equally hardy, so may be planted in any Soil or Situation, where many other Sorts will not thrive, and during its Continuance in Flower will make a Variety in the Garden.

The 9th Sort is annual. This hath been many Years propagated in the *English* Gardens, under the Title of Sultan Flower, or sweet Sultan. It was brought from the *Levant*, where it grows naturally in arable Land, among the Corn. This sends up a round channelled Stalk, near three Feet high, which divides into many Branches, garnished with jagged Leaves, of a pale green, smooth, and stand close to the Branches; from the Side of the Branches come out long naked Foot Stalks, each sustaining a single Head of Flowers shaped like those of the other Species, which have a very strong Odour, so as to be offensive to many People, but to others very grateful. The Empalement of these is scaly, round, and without Spines; the Flowers are in some purple, and others white, and likewise a Flesh Colour between, which hath come from the same Seeds. There is a Variety of this with fistular Flowers; and another with fringed Flowers, commonly called *Amberbai* or *Emberbai*; but these have degenerated to the common Sort in a few Years, although I have saved the Seeds with great Care. These Seeds are commonly sown upon a hot Bed in Spring, to bring the Plants forward, and in *May* they are transplanted into the Borders of the Flower Garden; but if the Seeds are sown on a warm Border in Autumn, they will live through the Winter; and these Plants may be removed in the Spring into the Flower Garden, which will be stronger, and come earlier to flower, than those which are raised in Spring. The Seeds may also be sown in the Spring on a common warm Border, where the Plants

Plants will rise very well, but these will be later in flowering than either of the other. The autumnal Plants will begin to flower the Middle of *June*, and will continue flowering till *September*; and the Spring Plants will flower a Month later, and continue till the Frost stops them. Their Seeds ripen in Autumn.

The 10th Sort has been supposed to be only a Variety of the former, which is a great Mistake; for although there is a great Similitude in their Appearance, yet they are specifically different, so never alter. I have cultivated this Sort upwards of thirty Years, and have never observed the least Variation in it. This is much tenderer than the former, so the Seeds must be sown on a hot Bed in Spring; and when the Plants are fit to remove, they should be transplanted on a fresh hot Bed, to bring them forward: When they have taken Root in this Bed, they must have Air admitted every Day, to prevent their drawing up weak, and refreshed with Water sparingly, because they are very apt to rot with much Wet. When the Plants have obtained Strength, they must be carefully taken up, and planted in separate Pots, filled with light Earth, and some of them placed in the Shade till they have taken Root; then they may be placed with other annuals in the Pleasure Garden, where they will continue long in Beauty. But as the Plants which are placed in the open Air, rarely produce good Seeds, there should be two or three Plants kept in a moderate hot Bed, under a deep Frame, where they will come earlier to flower; and being protected from Wet and Cold, will ripen their Seeds every Year; which is the surest Method to preserve the Sort.

This Sort differs from the common, in its Leaves being sawed on the Edges, the Flowers fistular, of a bright yellow, and have a very agreeable soft Odour. It flowers in *July* and *August*, and the Seeds ripen in *October*.

The 11th Sort is the common Blue Bottle, which grows naturally amongst the Corn in most Parts of *England*; this stands in the List of medicinal Plants; there is a distilled Water of the Flowers, which is esteemed good for the Eyes. There are great Varieties of Colours in these Flowers, some of which are finely variegated: The Seeds are sold by Seedsmen by the Title of Bottles of all Colours. These are annual Plants, which will rise in any common Border, and require no Care but to keep them clean from Weeds, and thinned where too close, for they do not thrive well when transplanted. If the Seeds are sown in Autumn they succeed better, and the Plants flower stronger than those which are sown in Spring.

The Seeds of the 12th Sort were sent me from Dr. *Lippi*, at *Grand Cairo*. This is an annual Plant, which rises near 2 Feet high, sending out 2 or 3 Branches toward the Top; the Leaves are divided into many obtuse Parts, and have a Border running along the Stalk; the Flowers are small, of a bright purple, and have a scaly Empalement. If the Seeds are sown in Spring on a Border of light Earth, where the Plants are to remain, they will require no farther Care but to keep them clean from Weeds. It flowers in *July*, and the Seeds ripen in Autumn.

The 13th Sort is perennial, and retains its Leaves through the Year. This grows naturally in *Italy*, on the Borders of the Fields. The Leaves are hoary, and divided into many narrow Segments; the Stalks rise near 3 Feet high, branching upward into many Divisions,

each being terminated by a Head of purple Flowers; these come out in *June*, and in favourable Seasons will perfect Seeds in Autumn. This Sort will live abroad in moderate Winters, in a warm Situation and dry Soil, but in severe Winters are commonly killed; so one or two of them may be sheltered under a common Frame in Winter to preserve the Kind. It may be easily propagated by Seeds, as the 5th Sort, or if the young Branches, which do not shoot up to flower, are cut off, and planted in a shady Border any Time in Summer, they will take Root, and in Autumn may be removed to warm Borders, or put into Pots to be sheltered in Winter.

The 14th Sort grows naturally in *Mauritania*, and other Places on the Borders of the *Mediterranean Sea*. This seldom rises more than 3 Feet high in this Country; it hath a perennial Stalk, which divides into many Branches, garnished with very white woolly Leaves, divided into many obtuse Lobes, which are entire; the small Leaves, or Lobes, on the exterior Part of the Leaf, being the largest. The Flowers are produced from the Side Branches, upon short Foot Stalks, of a bright yellow, and are included in a fine hairy Empalement. These appear in *June* and *July*, but scarce ever are succeeded by Seeds in *England*. It is propagated by planting the young Shoots as the last, and the Plants require Protection from hard Frost. But if they are planted in dry Lime Rubbish, where they will not grow luxuriant, they will resist the Cold of our ordinary Winters in the open Air. As this Plant retains its Leaves all the Year, which are extremely white, it makes a pretty Variety in a Garden.

The 15th Sort is annual. This grows naturally in the *Archipelago*. It rises with a branching Stalk, about 3 Feet high; the lower Leaves are not much unlike those of the Turnep, being rounded at their Ends, and their Base is cut into many Parts; those upon the Stalks and Branches are nearly of the same Form, but diminish gradually in their Size to the Top; these have a Border or Wing running along the Stalks, which connect them together; the Flowers are produced at the End of the Branches, which have prickly Empalements; the Spines come out from the Border of the Scales, divided like the Fingers of a Hand. The Flowers are of a bright purple, so make a pretty Appearance. This Sort may be treated in the same Matter as the Corn Bottle, by sowing the Seeds in Autumn, and keeping the Plants clean from Weeds. They flower in *June*, and the Seeds ripen in *August*: If some Seeds are sown in Spring, the Plants will flower a Month after the others, and continue flowering till the Frost stops them; but these do not always perfect Seeds; so that from the autumnal Plants the Seeds will more certainly be procured.

The 16th Sort grows naturally upon the *Helvetian* Mountains. I received the Seeds of this from *Verona*. It hath a perennial Root, and an annual Stalk; the Leaves are oblong, slightly indented on their Edges, and woolly on their under Side; these much resemble those of *Elecampane*, generally standing upright; the Stalks rise little more than a Foot high, and are terminated by large single Heads of purple Flowers, inclosed in scaly Empalements; these appear in *July*, but unless the Season proves very dry and warm, no Seeds succeed them in this Country; so that this, like the 6th Sort, is very difficult

difficult to propagate in *England*, unless good Seeds can be procured from the Countries where it naturally grows. It is very hardy, so may be treated in the same Manner as any of the former perennial Sorts, but will require a little more Room than the sixth.

The 17th Sort grows naturally in *Austria*, and *Hungary*, from whence I received the Seeds. The lower Leaves of this Plant spread flat on the Ground; they are soft, hairy, and end in sharp Points; but toward their Base, are cut into several narrow Segments; the Stalks rise near 3 Feet high, garnished at each Joint by Spear-shaped Leaves, which are entire, and terminated by single large Heads of Flowers, of a Gold Colour, inclosed in a prickly scaly Empalement. This flowers in *July* and *August*, but never produces Seeds in this Country. It hath a perennial Root, which sends out Offsets, these may be taken from the old Plants in Autumn, whereby it may be easily propagated. It is very hardy in respect to Cold, but should have a dry Soil, the Roots being very apt to rot in Winter with much Wet.

The 18th Sort grows naturally in *Siberia*. The Seeds of this were sent me from *Petersburgh*. This sends out many long winged Leaves, which are divided into several Spear-shaped Lobes; the Stalks rise near 5 Feet high, and divide upward into many smaller Branches, garnished with Leaves of the same Form with the lower, but much smaller, and the Segments very narrow; each of these is terminated by a Head of yellow Flowers, inclosed in a scaly Empalement; the Borders of the Scales are set with fine Hairs like an Eye Brow. It flowers in *June*, *July*, and *August*, and the Seeds ripen in Autumn. This hath a perennial Root, and an annual Stalk, which, with the Leaves, decay in Autumn, and rise new from the Root in Spring. It may be propagated either by Seeds, or parting the Roots, in the same Manner as the 6th Sort; the Plants require a large Share of Room, so should not be planted too near other Plants; therefore it is not proper for small Gardens.

The 19th Sort grows naturally in *Zant*, from whence the Seeds were sent me. This is an annual Plant, which rises with a slender Stalk, a Foot and a Half high, garnished with wing-pointed Leaves, very narrow, and a little hoary; the Flowers are small, of a purple Colour, and are inclosed in an obtuse scaly Empalement. These appear in *July*; but unless the Season proves very favourable, the Seeds will not ripen in *England*.

The 20th Sort came also from *Zant*. This hath a perennial Root and annual Stalk; the Leaves winged, very narrow, and hoary; the Stalk rises a Foot high, garnished with small Leaves of the same Form; the Flowers are purple, inclosed in scaly Empalements. It flowers in *July*, but seldom ripens Seeds in *England*. This must have a dry Soil, and a warm Situation.

CENTAURIUM MINUS. See *Gentiana*.

CENTINODIUM, Knot Grass. See *Polygonum*.

CEPA. The Onion.

The Varieties of the common Onion are,

The *Straßburgh*. This is the *Cepa oblong*. C. B. P. 71.

The *Spanish* Onion. This is the *Cepa vulgaris, floribus & tunicis purpurascens*. C. B. P. 71.

The white *Egyptian* Onion. This is the *Cepa floribus & tunicis candidis*. C. B. P. 71.

All these vary from Seeds, so that there are several

intermediate Differences, not worth enumerating.

These three Varieties are propagated by Seeds, which should be sown the latter End of *February*, or Beginning of *March*, on good, rich, light Ground, which should be well dug, levelled, and cleared from the Roots of all bad Weeds; then the Seeds should be sown, in a dry Time, when the Surface of the Ground is not moist; and where they are intended for a Winter Crop, they must not be sown too thick. The common Allowance of Seed is six Pounds to one Acre; but the generality of Gardeners sow more; because many of them allow for a Crop to draw out, which they call Cullings; these are all such as want to be removed from the others, which are thinned out young, and tied in Bunches for the Market; but those who regard their principal Crop, never practise this; therefore sow no more Seeds than is sufficient, which is the Quantity before mentioned: For when the Plants come up close, they draw each other weak; and when this happens, their Roots never grow so large as those which are thin: Besides, there is a greater Trouble in hoeing them; and when they are thinned for the Market, the Ground is trodden over, and the Onions which are to stand, have their Leaves bruised whereby they are greatly injured; so that where young Onions are wanted, it is a much better way to sow some separate Beds for this Purpose, than to injure the future Crop.

In about six Weeks after sowing, the Onions will be up forward enough to hoe; at which Time (choosing dry Weather) you should, with a small Hoe about two Inches and a Half broad, cut up lightly all the Weeds from amongst the Onions; and also cut out the Onions, where they grow too close in Bunches, leaving them at this first Hoeing, at least two Inches apart. This, if well performed, and in a dry Season, will preserve the Ground clear of Weeds, at least a Month; when you must hoe them over a second time, cutting up all the Weeds, as before, and also cut out the Onions to a larger Distance, leaving them this time 3 or 4 Inches asunder. This also, if well performed, will preserve the Ground clean a Month or six Weeks longer, when you must hoe them over the third and last Time.

Now you must carefully cut up all Weeds, and single out the Onions to near 6 Inches square; by which they will grow much larger than if left too close. This Time of hoeing, if the Weather proves dry, and it is well performed, will keep the Ground clean until the Onions are fit to pull up; but if the Weather should prove moist, and any of the Weeds should take Root again, you should, about a Fortnight or 3 Weeks after, go over the Ground, and draw out all the large Weeds with your Hands; for the Onions having now begun to bulb, they should not be disturbed with a Hoe.

Toward the Middle of *August*, your Onions will have arrived to their full Growth, which may be known by their Blades falling to the Ground, and shrinking; you should therefore, before their Necks or Blades are withered off, draw them out of the Ground, cropping off the extreme Part of the Blade, and lay them abroad upon a dry Spot of Ground to dry, observing to turn them over every other Day at least to prevent their striking fresh Root into the Ground; which they will suddenly do, especially in moist Weather.

In about a Fortnight's Time your Onions will be dry enough to house, which must be performed in perfect dry Weather; in doing this, you must carefully rub off all the Earth, and be sure to mix no faulty ones among them, which will in a short Time decay, and spoil all those that lie near them; nor should you lay them too thick in the House, which would occasion their sweating, and thereby rot them; these should not be put in a lower Room, or Ground Floor, but in a Loft or Garret; and the closer they are kept from the Air, the better they will keep. You should, at least, once a Month look over them to see if any are decayed; which if you find, must be immediately taken away, for they will infect all that lie near them.

But notwithstanding all the Care you can possibly take in drying and housing your Onions, many of them will grow in the Loft, especially in mild Winters, which are generally moist; therefore those who would preserve them late in the Season, should select a Parcel of the firmest and most likely to keep, and with a hot Iron slightly singe their Roots, which will effectually prevent their sprouting, but in doing this great Caution must be used not to scorch the Pulp of the Onions, for that will cause them to perish soon after.

The best Onions for keeping are the *Strasburg* Kind, which is an oval-shaped Bulb; but this seldom grows so large as the *Spanish*, which is flatter; the white Sort is esteemed the sweetest; but these Varieties are not lasting; for if you save Seeds of white Onions only, you will have a Mixture of the red among them; nor will the *Strasburg* keep long to its Kind, but will by Degrees grow flatter, as do the large *Portugal* Onions, when planted in our Climate, which, in a Year or two, will so far degenerate as, not to be known they were from that Race.

But in order to save Seeds, make Choice in the Spring of some of the firmest, largest, and best shaped Onions (in Quantity proportionable to the Seed you intend to save); and having prepared a Piece of good Ground (which should be well dug, and laid out in Beds about 4 Feet wide), in the Beginning of *March* plant your Onions in the following Manner. Having strained a Line about 4 Inches within the Side of the Bed, you must, with a Spade, throw out an Opening about 6 Inches deep, the Length of the Bed, into which you should place the Onions, with their Roots downward, at about 9 Inches Distance from each other; then with a Rake draw the Earth into the Opening again to cover the Bulbs; then proceed to remove the Line again a Foot farther back, where you must make an Opening as before, and so again till the Whole is finished, so you will have 4 Rows in each Bed, between which you must allow a Space of 2 Feet for an Alley to go among them to clear them from Weeds, &c. In a Month's Time their Leaves will appear above Ground, and many of the the Roots will produce 3 or 4 Stalks each; you must therefore keep them diligently cleared from Weeds, and about the Beginning of *June*, when the Heads of the Flowers begin to appear, upon the Tops of the Stalks, you must provide a Parcel of Stakes about 4 Feet long, which should be driven into the Ground, in the Rows of Onions, at about 6 or 8 Feet apart, to which you should fasten some Packthread, Rope Yarn, or small

Cord, which should be run on each Side the Stems of the Onions, a little below their Heads, to support them from breaking down with the Wind and Rain, for when the Seeds are formed, the Heads will be heavy, and so are very often broken down by their own Weight, where they are not well secured, and if the Stalks are broken before the Seeds have arrived to Maturity, they will not be near so good, or keep so long as those which are perfectly ripened.

About the End of *August* the Onion Seed will be ripe, which may be known by its changing brown, and the Cells in which the Seeds are contained opening; so that if it be not cut in a short Time, the Seeds will fall to the Ground; when you cut off the Heads, they should be spread abroad upon coarse Cloths in the Sun, observing to keep it under Shelter in the Night, and in wet Weather: when the Heads are quite dry, you must beat out the Seeds, which are very easily discharged from their Cells; then having cleared it from all Husk, &c. after having exposed it one Day to the Sun to dry, put it up in Bags to preserve it for Use.

The Directions here given are for the general Crop of Winter Onions, but there are two other Crops of this common Sort of Onion, cultivated in the Gardens about *London* to supply the Market, one of which is commonly called *Michaelmas* Onions. These are sown in Beds pretty close, the Beginning of *August*, and must be well weeded when they come up. In the Spring of the Year, after the Winter Onions are over, they are tied up in Bunches to supply the Markets; but from the thinning of these, they carry to Market young green Onions in *March*, for Sallads, &c.

In the Spring they sow more Beds in the same Manner, to draw up young for Sallads, after the *Michaelmas* Onions are grown too large for that Purpose, and where a Supply of these are required, there may be three different Sowings, at about three Weeks distant from each other, which will be sufficient for the Season.

There are also the following Sorts of Onions cultivated in the Kitchen Gardens.

The *Shallot*, or *Escalalette*, which is the *Cepa Ascalonica*. *Mattb.* 556.

The *Ciboule*, or *Cepa fissilis*. *Mattb. Lugd.* 1539.

The *Gives*, or *Cepa scutellus juncifolia perennis*. *Mor.*

The *Welch* Onion I suppose to be the same with the *Ciboule*, for I have several Times received the *Ciboule* from Abroad, which, when planted, proved to be what is generally known here by the Title of *Welch* Onions. There is also a great Affinity between the *Escalalettes* and these, so that they are not well distinguished yet, for although they are generally cultivated in Gardens, yet they are not well known to Botanists, some of whom have supposed a greater Variety than is in Nature, while others have joined them together.

The Scallion, or Escallion, is a Sort of Onion which never forms any Bulbs at the Roots, and is chiefly used in Spring for green Onions, before the other Sorts, sown in *July*, are big enough; but this Sort of Onion, how much soever in Use formerly, is now so scarce as to be known to few, and is rarely to be met with, except in curious Botanic Gardens: the Gardeners near *London* substitute another Sort for this, which are those Onions which decay and sprout in the House: These they

they plant in a Bed early in Spring, which in a short Time will grow large enough for Use; when they draw them up, and after pulling off all the outer Coat of the Root, they tie them up in Bunches, and sell them in the Market for Scallions.

The true Scallion is easily propagated by parting the Roots, either in Spring or Autumn, but the latter Season is preferable, because of their being rendered more fit for Use in Spring; these Roots should be planted 3 or 4 in a Hole, at 6 Inches Distance every Way, in Beds or Borders 3 Feet wide, which in a short Time will multiply exceedingly, and will grow in almost any Soil and Situation; their being so hardy as to resist the severest of our Winters, and being green, and fit for Use so early in the Spring, renders them worthy of a Place in all good Kitchen Gardens.

The Cives are a very small Sort of Onion, which never produces Bulbs, and seldom grows above 6 Inches high in the Blade, which is very small and slender, and are in round Bunches; this was formerly much used for Sallads in Spring, as being milder than those Onions which had stood thro' the Winter; these are propagated by parting their Roots like the former, are also very hardy, and will be fit for Use early in Spring.

The Welsh Onions are only propagated for Spring Use also; these never make any Bulb, and are therefore only fit to be used green for Sallads, &c. They are sown about the End of July, in Beds of about 3 Feet and a Half wide, leaving Alleys of 2 Feet broad to go between the Beds to clean them; in a Fortnight they will appear above Ground, and must be carefully cleared from Weeds; towards the Middle of October their Blades will die away, and the whole Spot seem naked, which hath led many to dig up the Ground again, supposing the Crop totally lost; whereas, if they stand undisturbed, they will come up again very strong in January, and from that Time grow vigorously, resisting all Weathers, and by March will be fit to draw for young Onions; they are, in the Markets, more valued than any other Sort at that Season, extremely green and fine, though much stronger than the common Onion in Taste, approaching nearer Garlick, which hath occasioned their being less esteemed for the Table: but as no Winter, however hard, will hurt them, it is proper to have a few to supply the Table, in Case the common Sort should be destroyed by Frosts.

The Roots of these Onions, if planted out at 6 or 8 Inches Distance, in March, will produce ripe Seeds in Autumn, but it will be in small Quantities the first Year, therefore the same Roots should remain unremoved, which the 2d and 3d Year will produce many Stems, and afford a good Supply of Seeds; these Roots will abide many Years good, but should be transplanted and parted every 2d or 3d Year, which will cause them to produce strong Seeds.

CEPHALANTHUS. Lin. Gen. Plant. 105. *Platanoccephalus*. Vaill. Acad. R. Scien. 1722. Button Wood.

The Characters are,

It hath a Number of small Flowers, which are collected into a spherical Head; these have no common Empalement, but each particular Flower hath a Funnel-shaped Empalement, divided into four Parts at the Top: the Flower is Funnel-shaped, of one Petal, divided at the Top into four

Parts, inclosing four Stamina, which are inserted in the Petal, and are shorter than the Tube, being terminated by globular Summits. The Germen is situated under the Flower, supporting a Style, which is longer than the Petal, and is crowned by a globular Stigma; the Germen becomes a globular hairy Capsule, inclosing one or two oblong angular Seeds; these are joined to an Axis, and form a round Head.

The Species are,

1. **CEPHALANTHUS foliis oppositis ternisque.** Flor. Virg. 15. Button Tree with Leaves growing opposite by threes. This is the *Scabiosa dendroides Americana ternis foliis caulem ambientibus, floribus ochroleucis.* Pluk. Alm. 336. Tree-like American Scabiose with three Leaves surrounding the Stalk, and yellowish white Flowers.

2. **CEPHALANTHUS foliis oppositis.** Flor. Zeyl. 53. *Cephalanthus* with Leaves growing opposite. This is the *Platanoccephalus citrii foliis bijugis, capite majore.* Vaill. Acad. R. Scien. 1722. Button Tree with Citron Leaves joined together, and a larger Head.

The 1st Sort grows naturally in North America, from whence the Seeds are annually sent to Europe, and of late great Numbers of the Plants have been raised in the Gardens of the Curious; but there are no very large Plants in the English Gardens; the largest I have seen are in the curious Gardens of his Grace the Duke of Argyle, at Whitton, near Hounslow, where they thrive better than in almost any other Place where they have been planted, so that in a moist Soil they will do the best.

This seldom rises higher than 6 or 7 Feet in this Country. The Branches come out by Pairs, opposite at each Joint; the Leaves also stand opposite, sometimes by Pairs, and at others, 3 arise at the same Joint, standing round the Branch; these are near 3 Inches long, and one and a Quarter broad, having a strong Vein running longitudinally through the Middle, and some small transverse Veins from that to the Borders; they are of a light green, and their Foot Stalks change to a reddish Colour next the Branches; the Ends of the Branches are terminated by loose Spikes of spherical Heads, about the Size of a Marble, each of which are composed of many small Flowers, by Funnel-shaped, of a whitish yellow Colour, fastened to an Axis which stands in the Middle; these appear in July, and, in warm Seasons, are succeeded by Seeds, which have sometimes ripened in England.

These Plants are propagated chiefly by Seeds (though there has been some raised from Cuttings) these should be sown in Pots, for the greater Conveniency of removing them into a shady Situation, or where they may have Shelter. If the Seeds can be procured so early as to sow them before Christmas, the Plants will come up the following Summer; but if they are sown in Spring, they generally remain a Year in the Ground; in such Case, the Pots should be placed in the Shade that Summer, and placed the Autumn following under a common Frame to shelter them from Frost, and the Spring following the Plants will come up.

The 1st Year, when the Plants come up, it is necessary to shade them in hot dry Weather, while they are young; at which Time they are often destroyed by being too much exposed; nor should the Watering be neglected; for as these Plants naturally grow on moist Ground, when they are not duly watered in dry Weather, the young Plants languish and decay.

The next Autumn, when the Leaves begin to drop, the young Plants may be transplanted into Nursery Beds, which should be a little defended from cold Winds; and, if the Soil is moist, they will succeed much better than in dry Ground; but where it happens otherwise, it will be absolutely necessary to water them in dry Weather, otherwise there will be great Danger of the Plants dying in the Middle of Summer, which has been the Case in many Gardens where these Plants were raised.

In these Nursery Beds the Plants may remain a Year or two (according to the Progress they have made, or the Distance they were planted); then they may be taken up in October, and transplanted where they are to remain. I have mentioned but one Season for transplanting them, yet this may also be performed in Spring, especially if the Ground is moist into which they are removed, or the Plants are duly watered if the Spring should prove dry, otherwise there will be more Hazard of their growing when removed at this Season.

These Plants make a pretty Variety among other hardy Trees and Shrubs, being extreme hardy in respect to Cold; but they delight in a moist light Soil, where they will grow very fast, and their Leaves will be larger than in dry Land.

The 2d Sort grows naturally in *Africa*, also in *India*; but is very rare in the *English* Gardens; this in the natural Places of its Growth, it becomes a large Tree, but the Plants which are in *Europe*, make but little Progress. It is tender when young, so requires a Stove to preserve it through the Winter; but after it obtains Strength, will live in a good Green-house. It is very difficult to propagate here, which occasions its Scarcity.

CERASTIUM. *Lin. Gen. Plant.* 518. *Myosotis*. *Tourn. Inst. R. H.* 244. *Tab.* 126. Mouse-ear, or Mouse-ear Chickweed, in *French*, *Oreille de Souris*.

The Characters are,

It hath a permanent five-leaved Empalement, which spreads open; the Flower hath five obtuse bifid Petals, which are as large as the Empalement. It hath ten slender Stamina, shorter than the Petals, and terminated by roundish Summits. In the Center is situated an oval Germen, from which arise five Styles, which are hairy, erect, and crowned with obtuse Stigmas; the Empalement afterward, becomes an oval cylindrical, or globular Capsule with one Cell, opening at the Top, containing many roundish Seeds.

The Species are,

1. **CERASTIUM** *foliis lanceolatis, pedunculis ramosis, capsulis subrotundis.* *Lin. Sp. Plant.* 439. *Cerastium* with Spear-shaped Leaves, branching Foot Stalks, and roundish Capsules. *Myosotis incana repens.* *Tourn.* Hoary creeping Mouse-ear, by some called Sea Pink.

2. **CERASTIUM** *foliis oblongis, tomentosis, pedunculis ramosis, capsulis globosis.* *Lin. Sp. Plant.* 440. *Cerastium* with oblong woolly Leaves, branching Foot Stalks, and globular Capsules. This is the *Myosotis tomentosa, linariae folio angustiore.* *Tourn. Inst. R. H.* 245. Woolly Mouse-ear with a narrow Toad-flax Leaf.

3. **CERASTIUM** *foliis lanceolatis, caule dichotomo ramosissimo, capsulis erectis.* *Prod. Leyd.* 450. *Cerastium* with Spear-shaped Leaves, a very branching Stalk divided in twos, and upright Capsules. This is the *Myosotis Hispanica segetum.* *Tourn. Inst. R. H.* 245. Spanish Corn Mouse-ear, or Horned Chickweed.

4. **CERASTIUM** *floribus pentandris, petalis integris.*

Lin. Sp. Plant. 438. *Cerastium* with Flowers having five Stamina, and entire Petals.

5. **CERASTIUM** *foliis connatis.* *Hort. Cliff.* 173. *Cerastium* whose Leaves are joined. This is the *Myosotis Orientalis perfoliata folio lychnidis.* *Tourn. Cor.* 18. Eastern perfoliated Mouse-ear with a *Lychnis* Leaf.

The 1st Sort grows naturally in *France* and *Italy*, and was formerly cultivated in the *English* Gardens under the Title of Sea Pink; it was planted as an Edging to keep up the Earth of Borders, before the Dwarf Box was brought to *England*, since which all those Plants formerly used for this Purpose have been neglected. This Plant is very unfit for this Use, because its creeping Branches spread into the Walks where they put out Roots into the Gravel, so that unless frequently cut off, they cannot be kept within Composts.

This Sort sends out many weak Stalks, which trail on the Ground, and put out Roots at their Joints, whereby it propagates fast; the Leaves are placed by Pairs opposite, they are two Inches long, and Half an Inch broad, these are very hoary; those next the Root are much smaller than the upper; Flowers come out from the Side of the Stalks on slender Foot Stalks, which branch out into several smaller, each supporting a white Flower, composed of five Petals, spilt at the Top. The whole Flower has the Appearance of Chickweed Flowers, but is larger; it flowers in *May*.

This Sort propagates too fast when admitted into Gardens, so may be planted between Stones on the Side of Grottos, where it will thrive without Care.

The Seeds of the 2d Sort I received from *Isiria*; this is by *Parkinson* titled Hoary narrow-leaved Pink. The Leaves of this are narrower than those of the former, and much whiter; the Stalks grow more erect, and the Seed Vessels rounder, in which their chief Difference consists. This is a trailing Plant, and propagates as the former, being equally hardy. It flowers in *May* and *June*, and the Seeds ripen in *August*.

The 3d Sort is annual; this grows naturally on arable Land in *Spain*, from whence the Seeds were sent to *England*, where it is allowed a Place in Botanic Gardens for Variety, but hath not much Beauty; this hath branching Stalks, which grow about 6 Inches high, dividing by Pairs, the Flowers coming out in the Middle of the Divisions, shaped like those of Chickweed; the whole Plant has a clammy Moisture, which sticks to the Fingers. This flowers in *May*, and the Seeds ripen in *July*. If the Seeds are sown in Autumn, they succeed better than in Spring, or if they are permitted to fall, the Plants will rise without Care.

The 4th Sort is very like the 3d in its whole Appearance, and differs from it, in having but five Stamina in the Flower, whereas the other hath ten. This was discovered by Mr. *Læfing*, a Pupil of Dr. *Linnaeus*'s, in *Spain*, from whence he sent the Seeds to *Upsal*, Part of which was sent me by the Doctor.

The 5th Sort was discovered by Dr. *Tournefort*, in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*, they have been since communicated to most of the curious Botanic Gardens in *Europe*. This is an annual Plant, which rises with an upright Stalk a Foot high; the lower Leaves have much Resemblance to those of the *Lychnis*, which is called Lobels Catchfly,

so that when the Plants are young, it is not easy to distinguish them. The Stalks are garnished with Leaves of the same Shape, but smaller; these are placed by Pairs, and embrace the Stalks at their Base. The Flowers come out at the Top of the Stalks, and also from the Wings of the Leaves, on the upper Part of the Stalks, which are white, and shaped like those of Chickweed. They appear in May and June, and are succeeded by beaked Capsules, containing many roundish Seeds.

If the Seeds of this Sort are sown in Autumn, they will more certainly grow than those which are sown Spring, or if the Seeds are permitted to scatter, the Plants will come up and live through the Winter, and will require no other Care but to keep them clean from Weeds.

There are many other Species of this Genus than are here enumerated, which are Weeds in many Parts of England, therefore not worthy of Notice here.

CERASUS the Cherry Tree, in French *Cerisier*.

I shall first enumerate the Sorts which are specifically different from each other, and then mention the Varieties of these Fruits, which are cultivated in the English Gardens, many of which seem to differ so essentially from each other, that they may be allowed as specific Differences; but as I have not had an Opportunity of trying the various Sorts from Seeds, to see if they alter, so I chose to insert them only as Varieties, till further Observation may better settle their Boundaries.

The Species are,

1. CERASUS *foliis ovato-lanceolatis, ferratis*. The common, or Kentish Cherry, with round, red, acid Fruit.

2. CERASUS *major ac sylvestris, fructu subdulci nigro colore insciente*. C. B. P. 450. Greater wild Cherry Tree with a sweetish Fruit, whose Juice affords a black Colour.

3. CERASUS *foliis ovato-lanceolatis, floribus confertis*. Cherry Tree with oval Spear-shaped Leaves, and Flowers growing in Clusters. This is the *Cerasus racemosa bortenensis*. C. B. P. Commonly called the Cluster Cherry.

4. CERASUS *floribus corymbosis, foliis ovatis*. Lin. Sp. Plant. Cherry Tree with Flowers growing in round Bunches, and oval Leaves. *Cerasus sylvestris amara, mabaleb putata*. I. B. The Mabaleb or perfumed Cherry.

5. CERASUS *pumila Canadensis, oblongo angusto folio fructu parvo*. Du Hamel. Dwarf Canada Cherry, with oblong narrow Leaves, and a small Fruit, called Ragouminer, Nega, or Minel in Canada.

The 1st Sort is the common Kentish Cherry, so well known, as to need no Description. From this Sort, it hath been supposed, most of the Varieties which are cultivated in the English Gardens, have been raised; but as there are very great Differences in the Size and Shape of their Leaves, as also in the Shoots of the Trees, from those of this Sort, I think it is very doubtful, where the Boundaries of their specific Differences terminate: However, I shall comply with the Generality of modern Botanists, in supposing the following Sorts to have been produced from the Seeds of this, as we have not sufficient Experiments to determine otherwise.

The Early May Cherry.	The Black Heart.
The May Duke Cherry.	The Amber Heart.
The Archduke Cherry.	The Ox Heart.
The Flemish Cherry.	The Lukeward.
The Red Heart.	The Carnation.
The White Heart.	The Hertfordshire Heart.
The Morello	Yellow Spanish Cherr.

The Bleeding Heart.

Two Sorts with double Flowers, one larger and fuller than the other. These are propagated for Ornament.

The 2d Sort is the Black Cherry, supposed to be a Native of England. This grows to a large Tree, fit for Timber, and is frequently found growing in the Woods. From this the only Varieties which I have ever known raised by Seeds, are the Black Coroun, and the small Wild Cherry; of which there are two or three Varieties, which differ in the Size and Colour of their Fruit.

These Wild Cherries are very proper to plant in Parks, because they grow to a large Size, make beautiful Trees, and in Spring when they are in Flower, are very ornamental. The Fruit of them will be good Food for Birds; and when the Trees are cut down, the Wood is very useful for Turners. These Trees will thrive in poor Land, better than most other Sorts; so there is an Advantage in propagating them in those Places. The French often plant them for Avenues to their Houses, on Land where they cannot get any other Trees to thrive; they also cultivate them in their Woods, to cut for Hoops, for which they are greatly esteemed.

The Stones of this Sort are generally sown for raising Stocks, to graft or bud the other Sorts of Cherries upon, being of quicker Growth, and longer Duration than either of the other; so are preferred to them.

The Wood of the 4th Sort, is by the French greatly esteemed for making Cabinets, because it hath an agreeable Odour. This, and the Wood of the Bird Cherry, pass under the Appellation of *Bois de Sainte Lucie*; but the Bird Cherry is the true Sort.

The 5th Sort was brought from Canada, where it grows naturally, to the Gardens in France, where it is cultivated as a flowering Shrub for Ornament. The Stones of this were sent me by Dr. Bernard de Jussieu, Professor of Botany at Paris, which succeeded very well in the Chelsea Garden; but by comparing this with a Specimen of the old *Chamaecerasus* or *Cerasus humilis* of Gerard, and other old Writers, I find it to be the same Plant, for it agrees exactly with their Descriptions of it.

This is a low Shrub, which seldom grows more than 3 or 4 Feet high, sending out many horizontal Branches, which spread on every Side, and are very subject to fall on the Ground, where they will put out Roots, and thereby multiply. The young Branches have a very smooth Bark, inclining toward red; the Leaves are long, narrow, very smooth, and entire, having the Appearance of some Sorts of Willow Leaves; of a light green on their upper Side, but of a bluish, or Sea-green, on their under: The Flowers come out from the Side of the Branches, 2, 3 or 4 rising at the same Joint, most Part of the Length of the young Shoots; these are shaped like those of the common Cherry, but are smaller, standing upon long slender Foot Stalks. The Fruit is like those of the small wild Cherry, but hath a bitterish Flavour. It flowers about the same Time as the other Sorts of Cherries, and the Fruit ripens in July; these Fruit are good Food for Birds, so the French plant them among their other Shrubs, to entice the Birds to harbour there.

It is easily propagated by laying down the Branches early in Spring, which will take Root by the following Autumn, when they may be taken off, and either planted in a Nursery, or to the Places where they are designed

to remain. It may also be propagated by sowing the Stones in the same Manner as other Cherries.

All the Sorts of Cherries which are usually cultivated in Fruit Gardens, are propagated by budding or grafting the several Kinds into Stocks of the Black or wild Red Cherries, which are strong Shooters, and of a longer Duration than any of the Garden Kinds. The Stones of these two Kinds are sown in a Bed of light sandy Earth in Autumn (or are preserved in Sand till Spring, and then sowed): When these Stocks arise, they must be carefully weeded; and if in dry Weather you refresh them with Water, it will greatly promote their Growth. These young Stocks should remain in these Nursery Beds till the second Autumn after sowing; at which Time you should prepare an open Spot of good fresh Earth, which should be well worked; but if the Soil is fresh, it will be the better. In this Ground, in *October*, you should plant out the young Stocks at 3 Feet Distance Row from Row, and about a Foot asunder in the Rows; being careful, in taking them from the Seed Beds, to loosen their Roots well with a Spade, to prevent their breaking; also to prune their Roots; and if they are inclinable to root downwards, shorten the Tap Root, to cause it to put out lateral Roots; but do not prune their Tops, for this they will not endure.

The second Year after planting out, if they take well, they will be fit to bud, if they are intended for Dwarfs; but if for Standards, they will not be tall enough until the fourth Year; for they should be budded or grafted near six Feet from the Ground, for otherwise the Graft will not advance much in Height; so that it will be impossible to make a good Tree from such as are grafted low, unless the Graft is trained upward.

The usual Way with the Nursery Gardeners is, to bud their Stocks in Summer, and such of them as miscarry, they graft the succeeding Spring (the Manner of these Operations will be described under their proper Heads). Those Trees where the Buds have taken, must be headed off in the Beginning of *March*, about six Inches above the Bud; and when the Bud hath shot in Summer, if you fear its being blown out by the Winds, you may fasten it up with some Bass, or such soft Tying, to that Part of the Stock which was left above the Bud. The Autumn following these Trees will be fit to remove. But if your Ground is not ready to receive them, they may remain two Years before they are transplanted; in doing which, you must observe not to head them, as is by many practised; for this, very often, is immediate Death to them; but if they survive it, they seldom recover this Amputation in five or six Years.

If they are for a Wall, I would advise the planting Dwarfs between the Standards; so that while the Dwarfs are filling the Bottom of the Walls, the Standards will cover the Tops, and produce a great deal of Fruit: But these, as the Dwarfs rise to fill the Walls, must be cut away, to make Room for them: And when the Dwarf Trees cover the Walls, the Standards should be entirely taken away. But I would advise, never to plant Standard Cherries over other Fruits, for no other Sort of Fruit will prosper well under the Drip of Cherries.

When these Trees are taken up from the Nursery, their Roots must be shortened, and all the bruised Parts cut off; as also the small Fibres, which would dry, grow

mouldy, and be a great Prejudice to the new Fibres; you must also cut off the dead Part of the Stock which was left above the Bud, close down to the back Part of it, that the Stock may be covered by the Bud. If these Trees are designed for a Wall, observe to place the Bud directly from the Wall, that the back Part of the Stock that was cut, may be hid from Sight. The Soil that Cherries thrive best in, is a fresh Hazel Loam; but if the Soil is a dry Gravel, they will not live many Years, and will be perpetually blighted in the Spring.

The Sorts commonly planted against Walls are the Early *May*, and *May Duke*, which should have a South aspect Wall. The Hearts and common Duke will thrive on a West Wall; and in order to continue this Sort later in the Season, they are frequently planted against North and North West aspect Walls, where they succeed very well; and the Morello on a North Wall; which last is chiefly planted for preserving. The Hearts are all of them ill Bearers; for which Reason they are seldom planted against Walls: But I am apt to believe, if they were grafted upon the Bird Cherry, and managed properly, that Defect might be remedied; for this Stock (as I am informed) will render Cherries very fruitful; and having the same Effect on Cherries, as the Paradise Stock hath on Apples, they may be kept in less Compass; which is an Experiment well worth the Trial.

Your Trees, if planted against a Wall, should be placed at least 20, or 24 Feet asunder, with a Standard Tree between each Dwarf: This will be found a reasonable Distance, when we consider that Cherry Trees will extend as far as Apricocks, and many other Sorts of Fruit.

In pruning these Trees, you should never shorten their Shoots; for the most Part of them produce their Fruit Buds at their extreme Part, which, when shortened, are cut off, and this often occasions the Death of the Shoot: Their Branches should be therefore trained in at full Length horizontally, observing in *May*, where there is a Vacancy in the Wall, to stop some strong adjoining Branches, which will occasion their putting out two or more Shoots; by which Means, at that Season of the Year, you may always get a Supply of Wood for covering the Wall; at the same Time all foreright Shoots should be displaced by the Hand; for if they are suffered to grow till Winter, they will not only deprive the bearing Branches of their proper Supply of Nourishment, but when they are cut out, it occasions the Tree to gum in that Part (for Cherries bear the Knife the worst of any Sort of Fruit Trees); but be careful not to rub off the Fides or Spurs, which are produced upon the two and three Years old Wood; for it is upon these that the greatest Part of the Fruit are produced; which Fides will continue fruitful for several Years. It is for want of duly observing this Caution, that Cherry Trees are often seen so unfruitful, especially the Morello, which the more it is cut, the weaker it shoots; and, at last, by frequent pruning, I have known a whole Wall of them destroyed; which, if they had been suffered to grow without pruning, might have lived many Years, and produced large Quantities of Fruit.

Cherry Trees are also planted for Orchards in many Parts of *England*, particularly in *Kent*, where there are large Plantations of these. The usual Distance allowed for their standing is 40 feet square, at which Space they

are

are less subject to Blight, than when they are closer planted; the Ground may be tilled between them almost as well as if it were entirely clear, especially while the Trees are young; and the often stirring the Ground, provided you do not disturb their Roots, will greatly help the Trees; but when they are grown so big as to shade the Ground, the Drip of their Leaves will suffer very few Things to thrive under them. These Standard Trees should be planted in a Situation defended as much as possible from strong Westerly Winds, which are very apt to break their tender Branches; this occasions their gumming, and is very prejudicial to them.

The Sorts best approved for Orchards are the common Red, or *Kentish* Cherry, the Duke, and Lukeward; which are plentiful Bearers. But Orchards of these are now scarcely worth planting, except where Land is very cheap; for the Uncertainty of their bearing with the Trouble in gathering the Fruit, and the small Price it commonly yields, hath occasioned the destroying many Orchards in *Kent*, within a few Years past.

This Fruit was brought out of *Pontus*, at the Time of the *Mithridatic* Victory by *Lucullus*, in the Year of the City 680, and were brought into *Britain* about *An. Dom.* 55. and were soon after spread through most Parts of *Europe*; it being generally esteemed for its Earliness, being one of the first of the Tree Fruit that appears to welcome in the approaching Fruit Season.

This Sort of Fruit hath been by many People grafted upon the Laurel, to which it is a Congener; but what Effect it hath either in the Growth of the Tree, or its Fruit, I have not been yet able to understand; though this Practice is as old as *Pliny*, who says it gives the Fruit a very pleasant Bitterness: But there is little to be depended upon in the Writings of the Ancients, with respect to the several Sorts of Trees being grafted on each other; very few of those we find mentioned by them to have been frequently practised, will succeed with us. Nor is it owing to the Difference of Climate, as some have supposed, who are inclinable to believe whatever they find related in those Books, especially in the Business of Husbandry and Gardening, whereas many of their Rules for the practical Part of Husbandry, are not founded on Experiments, but are mere Theory; for from many repeated Trials, made with the utmost Care, by Persons of the best Skill, it appears that no two Sorts of Trees, of different Genuses, will take upon each other. However, the Laurel and the Cherry being of the same Genus, or so near of Kin as to be ranked together by most Botanists, will take upon each other by grafting. But I have not yet seen any of the Trees so grafted, which have lived to be of any considerable Size; though I have seen many Trees so grafted, which have lived a few Years, but have made a very poor Progress; nor do I remember to have seen any Fruit upon the Cherry Trees which were grafted on the Laurels; therefore cannot determine what Effect this has on the Flavour of the Fruit.

There are some Persons who graft the Duke, and other Sorts of Cherries upon the Morello Cherry, which is but a weak Shooter, in order to check the luxuriant Growth of their Trees; which will succeed for three or four Years; but they are not of long Duration, nor have I ever seen one Tree so grafted, which had made Shoots above 6 or 8 Inches long; but they were closely covered with Blossoms, so may produce some Fruit in a small

Compas; but these are Experiments unfit to be carried into general Use, and only proper to satisfy Curiosity, for is it not much better to allow the Trees a greater Share of Room against the Walls, when one Tree, so planted, and properly managed, will produce more Fruit than 20 of these Trees, or twice that Number when planted too close, though they are grafted upon the Black Cherry, or any other free Stock.

The Early, or *May* Cherry, is first ripe; so one or two Trees of this Sort may be allowed a Place in a Garden, where there is Room for Variety. The next ripe is the *May* Duke, which is a larger Fruit and more valuable. After this comes the Archduke, which, if permitted to hang upon the Tree till quite ripe, is an excellent Cherry; but few Persons have Patience to let them hang their full Time, so rarely have them in Perfection, for these should not be gathered before *Midsummer*; and if they hang a Fortnight longer they will be better. This is to be understood of the Situation near *London*, where they ripen a Fortnight earlier than in Places forty Miles distant, unless they have a very warm sheltered Situation. When this Sort is planted against North Walls, the Fruit may be continued till *August*, but these must be protected from Birds, or they will destroy them.

The *Hertfordshire* Cherry, is a Sort of Heart Cherry, but a firmer and better flavoured Fruit; it will not ripen earlier than the End of *July*, or Beginning of *August*, and is the more valuable, for its coming when the other Sorts of Cherries are gone. This is not very common in the Nurseries as yet; but as it is one of the best Kinds of Cherries, it is not to be doubted but in a short Time it will be as common as any of the other Sorts.

The Morello Cherry, is generally planted against Walls to a North Aspect, and the Fruit commonly used for Preserving, yet where planted to a better Aspect, and suffered to hang upon the Trees until thoroughly ripe, is a very good Fruit for the Table; therefore two or three of the Trees of this Sort should have Place where there is Plenty of Walling, upon a South-west Wall, where they will ripen perfectly by the Middle of *August*, at which Time they will be an acceptable Fruit.

The Carnation Cherry is also valuable for coming late in the Season, this is a very firm fleshy Fruit, but is not the best Bearer. This Sort will ripen very well on *Espaliers*; and by this Means, the Fruit may be continued longer in the Season.

The large *Spanish* Cherry is nearly allied to the Duke Cherry, from which it seems to be only a Variety accidentally obtained; this ripens soon after the common Duke Cherry, and very often passes for it.

The yellow *Spanish* Cherry is of an oval Shape, and of an Amber Colour; this ripens late, and is a sweet Cherry, but not of a rich Flavour, and being but a middling Bearer, is not often admitted into curious Gardens, unless where Variety is chiefly considered.

The *Corone*, or *Coroun* Cherry, is like the Black Heart; but a little rounder; this is a very good Bearer, and an excellent Fruit, so should have a Place in every good Fruit Garden. This ripens the Middle of *July*.

The Lukeward ripens soon after the *Corone* Cherry; this is a good Bearer, and a very good Fruit; it is of a dark

dark Colour, not so black as the Corone; this will do well in Standards.

The Black Cherry is seldom grafted or budded, but is generally sown for Stocks to graft the other Kinds of Cherries upon; but where Persons are curious to have the best flavoured of this Sort of Fruit, they should be propagated by grafting from such Trees as produce the best Fruit. This Sort of Cherry is frequently planted in Wilderesses, where it will grow to a large Size, and, at the Time of its flowering, will make a Variety, and the Fruit will be Food for the Birds.

The Double-flowering Cherry is also propagated for the Beauty of the Flowers, which are extremely fine, being as double and large as a Cinnamon Rose; and these being produced in large Bunches on every Part of the Tree, render it one of the most beautiful Trees of the Spring. Some of the Flowers, which are less double, will often produce some Fruit, which the very double Flowers will not; but this Defect is sufficiently recompensed in the Beauty of its Flowers. This is propagated by budding or grafting on the Black or Wild Cherry Stock, and the Trees are very proper to intermix with the second Growth of flowering Trees.

CERASUS RACEMOSA. See Padus.

CERATONIA. *Lin. Gen. Plant.* 983. *Siliqua Tourn. Inf.* The Carob, or St. John's Bread, in French Carouge. The Characters are,

It is male and female in distinct Trees. The male Flowers have large Empalements, divided into 5 Parts; they have no Petals, but have 5 long Stamina, terminated by large Summits. The female Flowers have Empalements of one Leaf, divided by 5 Tubercles; they have no Petals, but a fleshy Germen situated within the Receptacle, supporting a slender Style, crowned by a Stigma in form of a Head. The Germen becomes a long fleshy compressed Pod, divided by transverse Partitions, each having 1 large roundish compressed Seed.

We have but one Specie of this Plant, viz.

1. CERATONIA. *H. L.* The Carob Tree, or St. John's Bread. This is the *Siliqua edulis* of Caspar Bauhin, and the Caroba of Dale.

This Tree is very common in Spain, Italy, and the Levant, where it grows in the Hedges, and produces a great Quantity of long, flat, brown coloured Pods, which are thick, mealy, and of a sweetish Taste. These Pods are many Times eaten by the Poorer Sort of Inhabitants, when they have a Scarcity of other Food, but they are apt to loosen the Belly, and cause Gripings of the Bowels. These Pods are directed by the College of Physicians to enter some medicinal Preparations, for which Purpose they are often brought from Abroad.

In England the Tree is preserved by such as delight in exotic Plants, as a Curiosity; the Leaves always continue green; and being different in Shape from most other Plants, afford an agreeable Variety, when intermixed with Oranges, Myrtles, &c. in the Green-house.

These Plants are propagated from Seeds, which, when brought over fresh in the Pods, will grow very well, if sown in Spring upon a moderate hot Bed; when the Plants come up, they should be carefully transplanted, each into a small Pot filled with light rich Earth, and plunged into another moderate hot Bed; observing to water and shade them until they have taken Root; after which let them have Air in Proportion to the Heat of the Weather. In June inure them to the open Air by De-

grees, and in July they should be removed out of the hot Bed, and placed in a warm Situation, where they may remain until the Beginning of October, when they should be removed into the Green-house, placing them where they may have free Air in mild Weather; for they are pretty hardy, and require only to be sheltered in hard Frosts. When the Plants have remained in the Pots three or four Years, and have gotten Strength, some of them may be turned out of the Pots in Spring, and planted in the full Ground, in a warm Situation, where they will endure the Cold of our ordinary Winters very well, but must have some Shelter in very hard Weather.

I have not yet seen any of these Trees produce Flowers, though from some which have been planted some Time against Walls, it is probable there may be Flowers and Fruit in a few Years; though it cannot be expected that the Fruit will ever ripen in this Country.

CERBERA. *Lin. Gen. Plant.* 260. *Thevetia. Lin. Hort. Cliff.* 76. *Prod. Leyd.* 413. *Abouai. Tourn. Inf.*

The Characters are,

The Empalement is composed of five sharp-pointed Leaves, which spread open, and fall away. The Flower is of one Leaf, Funnel-shaped, having a long Tube, and is spread open at the Top, where it is divided into five large Segments, which are obtuse, and stand oblique to the Mouth of the Tube; it hath five Stamina situated in the Middle of the Tube, which are terminated by erect Summits, which stand close together; in the Center is situated a roundish Germen, supporting a short Style, crowned by a Stigma in form of a Head; the Germen becomes a large, fleshy, roundish Berry, with a longitudinal Furrow on the Side, dividing it into two Cells, each, containing a single large compressed Nut.

The Species are,

1. CERBERA foliis ovatis. *Lin. Sp. Plant.* 208. Cerbera with oval Leaves. The Abouai.

2. CERBERA foliis linearibus, longissimis, confertis. *Lin. Sp. Plant.* 209. Cerbera with very long narrow Leaves, growing in Clusters. This is the Abouai Nerii folio, flore luteo. *Plum. Cat.* 20. Abouai with a Rose-bay Leaf, and a yellow Flower.

3. CERBERA foliis lanceolatis, nervis transversalibus. *Flor. Zeyl.* 106. Cerbera with Spear-shaped Leaves, and transverse Nerves. This is the Mangbas lactescens, foliis Nerii crassis venosis, Jasmini flore, fructu Persici simili venenato. *Burm. Zey.* 150. *Tab.* 70. Milky Mangbas with a thick veined Oleander Leaf, a Jasmine Flower, and a poisonous Fruit resembling a Peach.

The 1st Sort grows naturally in the Brazils, also in the Spanish West-Indies in Plenty: and there are some of the Trees growing in the British Islands of America; this rises 8 or 10 Feet with an irregular Stem, sending out many crooked diffused Branches, which toward their Tops are garnished with thick succulent Leaves, about three Inches long, and near two broad, of a lucid green, smooth, and very full of milky Juice, as is every Part of the Trees. The Flowers come out in loose Bunches, at the End of the Branches, which are of a Cream Colour, having long narrow Tubes, and at the Top cut into five obtuse Segments, which seem twisted, so as to stand oblique to the Tube; these spread open, and have the Appearance of the Flowers of Oleander. It flowers in July and August, but never produces Fruit in England. The Wood of this Tree stinks most abominably, and the Kernels of the Nuts are

are a most deadly Poison, so that the *Indians* always caution their Children against eating them, for they know of no Antidote to expel this Poison; nor will any of them use the Wood for Fuel; they take the Kernels out of the Shells, into which they put small Stones, then bore a Hole through each Shell, and string them; these they tie about their Legs to dance with, as the Morris Dancers use Bells.

The 2d Sort grows naturally in the *Spanish West-Indies*; in some of the *French Islands in America*, and hath lately been introduced into the *British Islands*, from whence I received the Seeds by the Title of *French Physick Nut*, but how it came by that Appellation, I cannot imagine, because there is another Plant which grows common there, and has passed under that Title many Years.

This rises with a round Stalk about the same Height as the former, dividing upward into many Branches. These, when young, are covered with a green smooth Bark, but as they grow older, the Bark becomes rough, and changes to a Grey or Ash Colour. The Leaves are four or five Inches long, and Half an Inch broad in the Middle, ending in sharp Points; these are of a lucid green, and come out in Clusters without Order, and are full of a milky Juice, which flows out when they are broken. The Flowers come out from the Side of the Branches on long Foot Stalks, each supporting two or three yellow Flowers with long Tubes, spreading open in the same Manner as the former. It flowers about the same Time, but never produces Fruit in England.

The 3d Sort grows naturally in *India*, also in some Parts of the *Spanish West-Indies*, from whence I received the Seeds; this rises with a woody Stem to the Height of twenty Feet, sending many Branches toward the Top, which are garnished with long Spear-shaped Leaves, rounded at their Ends; they are thick, succulent, and, on their upper Side, of a lucid green, having several transverse Nerves from the Mid-rib to the Side; on their under Side they are of a paler green. The Flowers are produced at the End of the Branches, standing on long Foot Stalks, each sustaining two or three Flowers shaped like those of the other Species.

These Plants may be propagated from their Nuts, which must be procured from the Countries where they grow naturally; these should be put into small Pots filled with light Earth, and plunged into a hot Bed of Tanners Bark in Spring, and treated in the same Manner as other tender exotick Seeds, giving them now and then a little Water to promote their Vegetation. When the Plants are come up about two Inches high, they should be transplanted each into a small Pot, filled with light sandy Earth, and plunged again into a hot Bed of Tanners Bark, observing to shade the Glasses in the Heat of the Day, until the Plants have taken new Root; they must also be frequently refreshed with Water, but it must not be given in too large Quantities. As the Summer advances, these Plants should have Air admitted to them, in Proportion to the Warmth of the Season; and when they have filled these Pots with their Roots, they should be turned out, and transplanted into other Pots of a larger Size, but they must not be too large, for the Roots of these Plants should be confined, nor should the Earth in which they are planted be rich, but a light sandy Soil is best for them; after they are new potted, they should be

plunged into the hot Bed again, observing to water them now and then, and also to admit Air under the Glasses every Day, in Proportion to the Warmth of the Season. When the Plants are grown about a Foot high, they should have a larger Share of Air, in order to harden them before the Winter, but they should not be wholly exposed to the open Air. In the Winter these Plants should be placed in a warm Stove, and during that Season they should have very little Water, especially in cold Weather, lest it should rot their Roots. The following Spring these Plants should be shifted again, at which Time you should take away as much as you conveniently can of the old Earth from their Roots, and cut off the decayed Fibres; then put them into Pots filled with the same light sandy Earth, and plunge them into the Bark Bed again, for these Plants will not thrive well unless they are constantly kept in Tan; and as they abound with milky Juice, so they should be sparingly watered, for they are impatient of Moisture, especially during the Winter Season.

When by any Accident the Tops of these Plants are injured, they frequently put out Shoots from their Roots, which if carefully taken up and potted, will make good Plants, so that they may be this Way propagated.

CERCIS. *Lin. Gen. Plant.* 458. *Siliquestrum*. *Tourn. Inst. R. H.* 646. The Judas Tree, in French, *Guainier*.

The Characters are,

It hath a short Bell-shaped Empalement of one Leaf, convex at the Bottom, and full of a Honey Liquor, at the Top it is indented in five Parts. The Flower hath five Petals, inserted in the Empalement, and greatly resembles a papilionaceous Flower. The two Wings rise above the Standard, and are reflexed; the Standard is of one roundish Petal, and the Keel is composed of two Petals, in form of a Heart, which inclose the Parts of Generation. It hath ten distinct Stamina, which decline, four of which are longer than the rest, and are terminated by oblong incumbent Summits. It hath a long slender Germen, sitting upon a slender Style, crowned by an obtuse Stigma; the Germen becomes an oblong Pod with an oblique Point, having one Cell, inclosing several roundish compressed Seeds.

The Species are,

1. *CERCIS foliis cordato-orbiculatis glabris*. *Hort. Cliff.* 156. *Cercis* with round, Heart-shaped, smooth Leaves. This is the *Siliquestrum*. *Cast. Duran.* 415, and the *Arbor Judæ*. *Dod. Pempt.* 786. The common Judas Tree.

2. *CERCIS foliis cordatis pubescentibus*. *Hort. Cliff.* 156. *Cercis* with downy Heart-shaped Leaves. This is the *Siliquestrum Canadense*. *Tourn. Inst. R. H.* 647. *Canada Arbor Judæ*, or Red Bud Tree.

The 1st Sort grows naturally in the South of *France*, in *Spain*, and *Italy*, and is by the *Spaniards* and *Portuguese*, titled the Tree of Love; this rises with an upright Trunk to the Height of 12 or 14 Feet, covered with a dark reddish Bark, and divides upward into many irregular Branches, garnished with round, Heart-shaped, smooth Leaves, placed irregularly on the Branches, having long Foot Stalks; they are of a pale green on their upper, and of a grayish Colour on their under Side, and fall off in Autumn. The Flowers come out on every Side the Branches, and many Times from the Stem of the Tree in Clusters, arising many from the same Point, having short Foot Stalks; they are of a very bright purple Colour, so make a fine Appearance, especially when the

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Branches are covered pretty thick with them, for they come out in the Spring with the Leaves, so are in full Beauty before the Leaves have obtained to half their Size. The Shape of the Flower is the same of the other papilionaceous (or Butterfly) Flowers; they have an agreeable Poignancy, so are frequently eaten in Sallads. When the Flowers fall off, the Germen becomes a long flat Pod, with one Cell, containing one Row of roundish Seeds, which are a little compressed; but these do not often succeed the Flowers in this Country upon Standard Trees, but where they have been planted against good affected Walls, I have seen great Plenty of Pods, which, in warm Seasons have ripened very well.

These Trees are usually planted with other flowering Trees and Shrubs, as ornamental to Pleasure Gardens, and for their singular Beauty well deserve a Place, for when arrived to a good Size, they are very productive of Flowers, so that the Branches are often closely covered with them, and the singular Shape of their Leaves makes a very pretty Variety in Summer, after the Flowers are past, and are never damaged by Insects, but are often entire when many other Trees have their Leaves almost eaten up. This Tree flowers in May, when planted in the full Air, but against warm Walls it is a Fortnight or three Weeks earlier.

The Wood of this Tree is very beautifully veined with black and green, and takes a fine Polish.

There are two other Varieties of this Tree, one with a white, and the other a Flesh-coloured Flower, but these have not half the Beauty of the first.

The 2d Sort grows naturally in *North America*, where it is called Red Bud, from the red Flower Buds appearing in the Spring, before the Leaves come out; this grows to a middling Stature in the Places where it is a Native; but in *England* rarely rises with a Stem to any Height, but branches out near the Root. The Branches of this are weaker than the 1st Sort; the Leaves are downy, and terminate in Points, whereas those of the 1st are smooth, and round at the End where they are indented. The Flowers of this are also smaller, so do not make so fine Appearance, but the Trees are equally hardy, so will thrive in the open Air very well.

The Flowers of this Sort are put into Sallads by the Inhabitants of *America*, and the *French* in *Canada* pickle them, but they have little Flavour. The Wood is of the same Colour and Texture as that of the first.

These Plants may be propagated by sowing their Seed upon a Bed of light Earth, towards the latter End of *March*, or the Beginning of *April* (and if you put a little hot Dung under the Bed, it will greatly facilitate the Growth of the Seeds); when your Seeds are sown, you should sift the Earth over them about Half an Inch thick; and, if the Season proves wet, it will be proper to cover the Bed with Mats, to preserve it from great Rains, which will rot the Seeds; these Seeds will often remain till the Spring following before they come up, so the Ground must not be disturbed till you are convinced the Plants are all come up, for some few may rise the first Year, and a greater Number the second.

When the Plants are come up, they should be carefully cleared from Weeds, and in very dry Weather now and then refreshed with Water, which will greatly promote their Growth. The Winter following, if the

Weather is very cold, it will be proper to shelter the Plants, by covering them with Mats or dry Straw in hard Frosts, but they should constantly be opened in mild Weather, otherwise they will grow mouldy, and decay.

About the Beginning of *April*, prepare a Spot of good fresh Ground, to transplant these out (for the best time to remove them is just before they begin to shoot); then you should carefully take up the Plants, being careful not to break their Roots, and plant them in the fresh Ground as soon as possible, because if their Roots are dried by the Air, it will greatly prejudice them.

The Distance these should be planted, must be proportionable to the Time they are to remain before they are again transplanted, but commonly they are planted two Feet Row from Row, and a Foot asunder in the Rows, which is full Room enough for them to grow two or three Years, by which Time they should be transplanted where they are designed to remain, for if they are too old when removed, they seldom succeed so well.

The Ground between the Plants should be carefully kept clean from Weeds in Summer, and in Spring should be well dug, to loosen the Earth, that their Roots may better extend themselves every Way; you should also at that Season prune off all strong Side Branches (especially if you intend to train them up for Standard Trees), that their Top Branches may not be checked by their Side Shoots, which often attract the greatest Part of the Nourishment from the Roots; and if their Stems are crooked, you must place a strong Stake down by the Side of each Plant, and fasten the Stem to it in several Places, so as to render it strait, which Direction it will soon take as it grows larger, and thereby the Plants will be rendered beautiful.

When they have been in this Nursery 3 or 4 Years, they should be transplanted in Spring where they are to remain, which may be in Wilderness Quarters, among other flowering Trees, observing to place them with Trees of the same Growth, so as they may not be overhanging, which is a great Prejudice to most Plants.

CEREFOLIUM. See Chærefolium.

CEREUS. *Par. Bat.* 122. *Boerb. Ind. Juss. Art. R. Par. Cactus. Lin. Gen. Plant.* 539. The Torch Thistle.

The Characters are,

It hath an oblong scaly Empalement, which is covered with Spines, and sits upon the Germen. The Flower is composed of a great Number of narrow pointed Petals, spread open like the Sun's Rays. It hath a great Number of declining Stamina, inserted to the Base of the Petals, and terminated by oblong Summits. The Germen, which is situated under the Empalement, supports a long cylindrical Style, crowned with a multifid Stigma, in form of a Head. The Germen becomes an oblong succulent Fruit, with a prickly Skin, full of small Seeds inclosed in the Pulp.

The Species are,

1. CEREUS erectus, sexangularis, longus, angulis distantibus. Upright long Cereus with 6 Angles, far distant. *Cereus erectus altissimus Syriamenfis. Par. Bat.* 116. Tallest upright Torch Thistle of *Surinam*.

2. CEREUS erectus quadrangularis, angulis compressis. Upright Cereus with 4 compressed Angles. *Cereus erectus quadrangularis, Costis alarum instar assurgentibus. Boerb. Ind. alt.* Four cornered upright Torch Thistle.

3. CEREUS erectus octangularis, angulis obtusis, superne

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pernè inermibus. Upright *Cereus* with 8 obtuse Angles, having no Spines on the upper Part. *Cereus erectus, fructu rubro non spinoso*. Par. Bat. 114. Upright Torch Thistle with a red Fruit, having no Spines.

4. *CEREUS erectus octangularis, angulis obtusis, spinis robustioribus patulis*. Upright *Cereus* with 8 Angles which are obtuse, and strong spreading Spines. This is the *Cereus erectus maximus fructu spinoso rubro*. Greatest upright Torch Thistle with a red prickly Fruit.

5. *CEREUS erectus novemangularis, obsoletis angulis, spinis lanâ brevioribus*. Upright *Cereus* with nine Angles, and Spines shorter than the Down. This is the *Cereus Curossavicus, erectus, maximus, fructu rubro non spinoso, lanugine flavescente*. Par. Bat. 115. Greatest upright Torch Thistle with a red Fruit, having no Spines, and a yellowish Down.

6. *CEREUS erectus octangularis, spinis lanâ longioribus*. Upright *Cereus* with 8 Angles, and Spines longer than the Down. *Cereus erectus crassissimus maximè angulosus, spinis albis pluribus longissimis, lanugine flavâ*. Boerb. Ind. Upright thickest Torch Thistle, having many Angles, several very long white Spines, and a yellow Down.

7. *CEREUS erectus novemangularis, spinis lanâ equalibus*. Upright Torch Thistle with 9 Angles, and Spines of equal Length with the Down. This is the *Cereus erectus, gracilis, spinosissimus, spinis flavis, polygonus, lanugine albâ pallescente*. Boerb. Ind. alt. 293. Upright, slender, Torch Thistle, very full of yellowish Spines, many Angles, and a pale white Down.

8. *CEREUS altissimus, gracilior, fructu extus luteo intus niveo, seminibus nigris pleno*. Tallest slender Torch Thistle with a Fruit yellow without, white within, and full of Black Seeds.

9. *CEREUS repens triangularis, fructu maximo rotundo, rubro, esculento*. Creeping triangular Torch Thistle, with a very large, round, red, eatable Fruit. This is the *Cereus scandens minor trigonus articulatus fructu suavissimo*. Par. Bat. prod. 118. Lesser, creeping, three cornered, jointed Torch Thistle, with a very sweet Fruit, commonly called in the *West Indies*, the true prickly Pear, and by the *Spaniards*, *Pitbataya*.

10. *CEREUS repens triangularis, angulis compressis*. Creeping, triangular Torch Thistle, with compressed Angles. This is the *Ficoides Americanum* s. *Cereus erectus, cristatus, foliis triangularibus profundè canaliculatis*. Pluk. Phyt. Tab. 29. f. 3. Crested American Torch Thistle, with three Angles deeply channeled.

11. *CEREUS repens subquingularis*. Creeping Torch Thistle with 5 Angles. This is the *Cereus scandens minor polygonus articulatus*. Par. Bat. 120. Lesser jointed climbing Torch Thistle with many Angles.

12. *CEREUS repens decemangularis*. Creeping *Cereus* with 10 Angles. This is the *Cereus minor scandens, polygonus, spinosissimus, flore purpureo*. Lesser climbing Torch Thistle, with many spinous Angles and a purple Flower.

The 1st Sort is the most common in the *English* Gardens. This grows naturally in *Surinam*, from whence it was brought to *Holland*, where it produced Flowers in the Year 1681, and from the *Dutch* Gardens, most Parts of *Europe* have been supplied with this Plant.

This rises with an upright Stalk, having 6 large Angles, which are far asunder, and are armed with sharp Spines, which come out in Clusters at certain Distances,

arising from a Point, but spread open every way like a Star; the outer Substance of the Stem is soft, herbaceous, and full of Juice, but in the Center there is a strong fibrous Circle running the whole Length, which secures the Stem from being broke by Winds. These will rise to the Height of 30 or 40 Feet, provided their Tops are not injured, if they have Room to grow; but some of them have grown too tall to be kept in the Stoves, so have either been cut off, or the Plants laid down at Length in Winter; but whenever the Stems are cut, or otherwise injured, they put out one, two, or sometimes three Shoots, from the Angles immediately under the wounded Part, and frequently one or two lower down. These Shoots, if they are not cut off, form so many distinct Stems, and grow upright; but these seldom are so large as the principal Stem, especially if more than one is left at the same Place. The Flowers come out from the Angles, on the Side of the Stem; these have a thick fleshy Foot Stalk, which is scaly, round, channelled, and hairy, supporting a swelling Germen, upon the Top of which fits the scaly prickly Empalement, closely surrounding the Petals of the Flowers, till a little Time before they expand, which in most of the Sorts, is in the Evening, and their Duration is very short; for before the next Morning they wither and decay. The Flower of this Sort is composed of many concave Petals, which, when fully expanded, are as large as those of the Hollyhock; the inner Petals are white, and are crenated at their Extremity. The Empalement is green, with some purple Stripes; the Middle of the Flower is occupied by a great Number of Stamina, which decline in the Middle, and rise at their Extremities, having roundish Summits. The Flowers of this Kind are never succeeded by Fruit in this Country; nor do the Plants often produce their Flowers here, but when they do, there are generally several on the same Plant. I have some Years had more than a dozen upon a single Plant, which have all flowered within a few Days of each other. The usual Time of its flowering is in *July*.

This Sort is not so tender as the others, so may be preserved in a warm Green-house, without any artificial Heat; but the Plants should have no Water given them in Winter, when they are thus situated; for unless they are placed in a Stove, where the Moisture is soon evaporated, the Wet will occasion them to rot.

These Plants grow naturally upon very dry rocky Places, where their Roots are confined, so they must not be planted in large Pots, nor should they be planted in rich Soil; the best Compost for them is one third light Earth from a Common, a third of Sea Sand, and the other Part sifted Lime Rubish; if these are well mixed together, and often turned over before the Plants are put into it, they will thrive the better. The farther Directions will be hereafter exhibited.

The 2d Sort rises with an upright Stem, like the first, but it hath only 4 Angles, which are compressed, and stand far asunder. This is very subject to put out many Shoots from the Sides, which stops its upright Growth, so that the Plants rarely rise more than 4 or 5 Feet high. This hath not flowered in *England*, so far as I have been able to learn.

The 3d, 4th, 5th, 6th, 7th, and 8th Sorts grow naturally in the *British* Islands of *America*, from whence I

received them in 1728. These have the same Form as the 1st, but differ in the Size of their Stems, the Number of Angles, and the Length of their Spines, as is before expressed in their Titles; but, except the 8th Sort, not any of them have flowered in *England* as yet, though there are many of the Plants which are more than 12 Feet high; the 8th Sort hath the smallest Stem of any of the upright Sorts which I have yet seen: This hath 9 obtuse Angles, which are armed with short Spines, placed at farther Distances than those of the other Sorts, nor are the Channels between the Angles near so deep. The Flowers are produced from the Angles, in the same Manner as the first, but they are smaller, and the Empalement is of a light green, without any Mixture of Colour. The Fruit is about the Size and Shape of a middling Bergamot Pear, having many soft Spines on the Skin; the Outside is a pale yellow, the Inside very white, full of Pulp, having a great Number of small black Seeds lodged in it. This Sort frequently flowers in *July*, and in warm Seasons will perfect its Fruit, which hath very little Flavour in this Country.

These Sorts are more impatient of Cold than the first, so require a Stove to preserve them in Winter; nor should they be exposed abroad in Summer, but kept constantly in the House, giving them a large Share of Air in warm Weather.

The 12th Sort grows naturally in *Peru*, from whence it was sent to the Royal Garden at *Paris*; in 1734, I was favoured with some Cuttings of it, by Dr. *Bernard de Jussieu*, Demonstrator of the Plants in that Garden. These succeeded in the *Chelfea* Garden, and have since been communicated to most of the curious Gardens in *England*. This is not so tender as the other Sorts, so may be preserved in a good Green-house in Winter, and in Summer should be exposed to the open Air, which will prevent the Shoots from drawing weak, and thereby a greater Number of Flowers will be produced; but during the Time they remain in the open Air, they should have very little Water; and if the Season should prove wet, the Plants should be screened from it, otherwise it will cause them to rot the following Winter. This Sort produces its Flowers in *May*, and sometimes earlier, when the Season is warm.

The 9th Sort is, by the Inhabitants of *Barbadoes*, trained up against their Houses, for the Sake of its Fruit, which is about the Bigness of a Bergamot Pear, and of a most delicious Flavour. This, and also the 10th, 11th, and 12th Sorts, are very tender, so require a very warm Stove to preserve them. These should be placed against the Walls of the Stove, into which they will insinuate their Roots, and extend themselves to a great Length; and with a little Help, in fastening them to the Wall here and there, may be led up about the Cieling of the House, where they will appear very handsome. The 11th Sort, when arrived to a sufficient Strength, will produce many exceeding large, beautiful, sweet-scented Flowers; but they are (like all the Flowers of these Kinds) of very short Duration, scarcely continuing full blown 6 Hours; nor do the same Flowers ever open again, when once closed: They begin to open in the Evening between 7 and 8 of the Clock, are fully blown by 11, and by 3 or 4 the next Morning fade, and hang down quite decayed; but, during their Continuance, this is scarce any

Flower of greater Beauty, or that makes a more magnificent Appearance; for the Calyx of the Flower, when open, is near a Foot Diameter, the Inside of which, being of a splendid yellow Colour, appears like the Rays of a bright Star, the Outside of a dark brown, and the Petals of the Flowers being of a pure white, adds to the Lustre, and the vast Number of recurved Stamina, surrounding the Style in the Center of the Flower, make a fine Appearance; add to this the fine Scent of the Flower, which perfumes the Air to a considerable Distance; there is scarce any Plant which deserves a Place in the hot House so much as this, especially as it is to be trained against the Wall, where it will not take up Room. The usual Season of its flowering is in *July*, and, when the Plants are large, they will produce a great Number of Flowers, so that there will be a Succession of them for several Nights, and many of them will open the same Night. I have frequently had 6 or 8 Flowers open at the same Time upon one Plant, which have made a most magnificent Appearance by Candle-light, but none of them have been succeeded by any Appearance of Fruit.

The 10th Sort produces a Flower little inferior to the former, as I have been informed by Persons who have seen them, but I never had the good Fortune to have any of these Plants flower, which have been under my Care; nor have I heard of more than two Gardens where they have as yet flowered in *England*; the first of them was many Years since in the Royal Gardens at *Hampton-Court*, when there was a curious Collection of exotick Plants kept in good Order, but which have since been greatly neglected; the other was produced in the Gardens of the Right Hon. the Marquis of *Rockingham*, at *Wentworth-Hall*, in *Yorkshire*. These are the only Gardens in this Country where I have heard of this Sort having produced Flowers; although there are many of these Plants in several Gardens, which are of a considerable Age, and extend their Branches to a very great Distance.

The 9th Sort has never produced Flowers in *England*, nor have we any good Figure of the Flower in any of the Botanick Books; but I have been informed by curious Persons who have resided in *America*, that the Flowers are not near so beautiful as those of the 10th and 11th, but the Fruit is greatly esteemed by the Inhabitants.

The 12th Sort produces a greater Number of Flowers than either of the other; they are of a fine Pink Colour both within and without; the Petals are not so numerous, and the Tube of the Flower is longer than those of the other Species; and, contrary to all the other Sorts, keep open 3 or 4 Days, if the Weather is not too hot, or the Stove kept too warm. During their Continuance they make a fine Appearance in the House. This Sort has very slender trailing Branches, which require to be supported; but these do not extend so far as those of the other Sort, nor are their Branches jointed as those are, so cannot be trained so far against the Walls of the House; but as it produces such beautiful Flowers, and in so great Plenty, it may be placed among the first Class of exotick Plants. This has produced Fruit in the Garden at *Chelfea*, but it has not ripened.

These are all propagated and increased by Cuttings, which you may take off their Stems at what Length you

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you please; these should be laid in a dry Place to heal, at least ten Days, or a Fortnight, before they are planted; but if they lie 3 Weeks it is much better, and they will be in less Danger of Rotting, especially the most succulent Sorts.

These Cuttings should be planted in Pots filled with the Mixture of Earth before directed, laying some Stones in the Pots to drain off the Moisture; then place the Pots in a gentle hot Bed of Tanners Bark, to facilitate their rooting, giving them once a Week a gentle Watering. The best Season for this Work is in June, or the Beginning of July, that they may have Time to root before Winter; towards the Middle of August begin to give them Air by Degrees to harden them, but they should not be wholly exposed to the open Air or Sun; at the End of September they must be removed into the Stove, or Greenhouse, where they are to abide in Winter, during which Season you must be very careful not to let them have much Water; and always observe to place the young Plants, for the first Winter, in a little warmer Situation than the older, being somewhat tenderer.

These Plants should always have a dry Situation in Winter, for as they imbibe the greatest Part of their Nourishment from the circumambient Air, so if this be too replete with moist Particles, it will occasion their rotting, therefore they should not be exposed abroad, not even in the Midst of Summer, unless they are under Shelter; for great Rains, which often happen at that Season, are very injurious to them; the first 8 Sorts should be therefore placed so as to enjoy a free Air in the Summer, but screened from Rains, and great Dews; it will therefore be much the better Method to set them in an open Glass Stove, where the Windows may be set open in good Weather, and shut in cold or wet. The other 4 Sorts must not be exposed too much to the open Air, even in the hottest Season, especially if you design to have them flower; and in Winter they should be kept very warm, and have no Water.

When you have once cut off the Tops of any of these Plants, in order to increase them, the lower Parts will put forth fresh Shoots from their Angles, which, when grown to be 8 or 9 Inches long, may also be taken off to make fresh Plants; and, by this Means, the old Plants will continually afford a Supply, so that one Plant of a Sort, will be sufficient to preserve for a Breeder.

These Plants being succulent, will keep a long Time out of the Ground, therefore whoever hath a Mind to get any of them from the *West-Indies*; need give no other Instructions to their Friends, but to cut them off, and let them lie 2 or 3 Days to dry, then put them up in a Box with dry Hay, or Straw, to keep them from wounding each other with their Spines, and if they are 2 or 3 Months on their Passage, they will keep very well, provided no Wet get to them.

CERINTHE. *Lin. Gen. Plant.* 171. *Tourn. Inst. Raii Meth. Plant.* 57. Honeywort, in French, *Melinet*.

The Characters are,

It hath an oblong permanent Empalement, cut into five equal Parts. The Flower hath one Petal, having a thick short Tube, which swells upward much thicker, and at the Brim is quinquefid; the Chaps are naked and perovious; it hath five short Stamina, terminated by pointed upright Summits. In the Bottom are situated four Germen, supporting a

slender Style the Length of the Stamina, crowned by an obtuse Stigma; two of the Germen afterward become so many Seeds, which are hard, smooth, plain on one Side, but convex on the other, and are inclosed in the Empalement.

The Species are,

1. **CERINTHE** *foliis ovato-oblongis, asperis, amplexicaulibus, corollis obtusiusculis, patulis.* Honeywort with oval, oblong, rough Leaves embracing the Stalk, and spreading blunt Petals. This is the *Cerintbe quorundam major, spinoso folio, flavo flore.* *J. B.* 3. 602. Greater Honeywort with a prickly Leaf, and a yellow Flower.

2. **CERINTHE** *foliis oblongo-ovatis, glabris, amplexicaulibus, corollis obtusiusculis, patulis.* Honeywort with oblong, oval, smooth Leaves, embracing the Stalks, and a spreading blunt Petal. *Cerintbe flore rubro purpurascente.* *C. B. P.* 258. Honeywort with a purplish red Flower.

3. **CERINTHE** *foliis amplexicaulibus, integris, fructibus geminis corollis acutis, clausis.* *Lin. Sp. Plant.* 137. Honeywort with entire Leaves, embracing the Stalk, a double Fruit, and a pointed closed Petal. This is the *Cerintbe minor.* *C. B. P.* 258. Smaller Honeywort.

4. **CERINTHE** *foliis amplexicaulibus emarginatis, fructibus geminis, corollis acutis clausis.* *Lin. Sp. Plant.* 137. Honeywort with Leaves embracing the Stalks, and indented at their Points, a double Fruit, and a pointed closed Petal. This is the *Cerintbe sine Cynoglossum montanum majus.* *C. B. P.* 258. Honeywort, or Greater Mountain Hounds Tongue.

5. **CERINTHE** *foliis lanceolato-linearibus hispidis, seminibus quaternis distinctis.* *Hort. Cliff.* 48. Honeywort with narrow Spear-shaped Leaves, which are set with prickly Hairs, and four distinct Seeds. This is the *Anchusa lutea major.* *C. B. P.* Greater Yellow Alkanet.

The first Sort grows naturally in Germany and Italy. This is an annual Plant, which rises with smooth branching Stalks a Foot and a Half high, garnished with oval, oblong, rough Leaves, of a Sea-green, spotted with white, and embrace the Stalks with their Base; the Flowers are produced at the End of the Branches, standing between the small Leaves, which embrace the Stalks; these are long, tubulous, and blunt at Top, where the Tube is greatly enlarged; they are yellow, and have a mellous Liquor in their Tubes, with which the Bees are much delighted; they have an herbaceous Empalement, cut into five Parts, which afterwards incloses the Seeds; these Flowers have each four Embryos, or Germen, but only two of them are fruitful. The Top of the Stalks are reflexed backward, somewhat like those of Turnsole. It flowers in June and July, and the Seeds ripen in August and September. If the Seeds are not taken as soon as they change black, they drop out of the Empalement, and so unless carefully gathered up, will vegetate with the first moist Weather.

The 2d Sort is like the first, but the Leaves are larger, and smooth, having no Prickles on them; the Flowers are of a purplish red Colour, and the Plants grow larger. This grows in Italy, and is also annual.

The 3d Sort grows naturally on the Alps, and other mountainous Places; this hath slenderer Stalks than either of the former, which rise two Feet high, and closer garnished with Leaves than either of the others; these embrace the Stalks with their Base, and are of a bluer green Colour. The Flowers are small, their upper Part

is deeply cut into five Segments, but the Mouth of the Tube is closely shut up, the Empalement is large, and closely furrounds the Flower. The Flowers are yellow, and appear at the same Time with the other Sorts. If the Seeds of this are permitted to scatter, the Plants will come up in Autumn, and will grow much taller, and flower earlier than those sown in Spring; this has been supposed perennial by many, but from many Years Observation, I could never find these Plants continue after they had perfected their Seeds.

The 4th Sort is very like the 3d, but the Leaves are not spotted, and are indented. The Flowers are smaller, not so deeply cut at Top, and the Segments more acute.

The 5th Sort grows naturally in *Austria, Hungary, and Italy*; this hath long, narrow, thick Leaves, covered closely with prickly Hairs, and lie upon the Ground; between these come out the Stalk, which rises a Foot high, garnished at each Joint with one Leaf of the same Sort, but smaller; these are placed alternately on the Stalks, and toward the upper Part they branch out into two or three smaller, upon which the Flowers stand between the Leaves, and form a short reflexed Spike, like the true *Alkanet*. The Flowers are of a pale yellow, shaped like those of the other Sorts, but smaller. This is a biennial Plant when cultivated in a Garden, though most of the Writers on Botany have supposed it to be perennial.

There are two Varieties of the 1st Sort, which differ only in the Colour of their Flowers, so are not constant.

The several Varieties of this Plant are propagated by Seeds, which should be sown soon after they are ripe; for, if kept till Spring, their growing Quality is often lost; the Plants are hardy, and if the Seeds are sown in a warm Situation, they will endure the Winter's Cold without Shelter; these autumnal Plants are also much surer to produce ripe Seeds than those sown in Spring, which are generally late in the Season before they flower; and consequently if the Autumn should not prove very warm, their Seeds would not be perfected.

These Plants are pretty Varieties for large Borders, where, if they are suffered to drop their Seeds, the Plants will rise without any farther Care, so that when a Person is once furnished with the several Varieties, he need be at no more Trouble than to allow each Sort a Place where it may remain, and sow itself; with this Culture, there is a greater Certainty of preserving the Sorts than in any other Management; nor will they perhaps be entirely lost in this Way, if it should happen that the Season should prevent their ripening Seed (as it sometimes proves); for when great Quantities of the Seeds have scattered upon the Ground, some of them will be buried so deep, in stirring the Earth, as not to grow the first Year; which, upon being turned up to the Air the succeeding Year, will come up as well as new Seeds.

CESTRUM. Lin. Gen. Plant. 231. Jasminoides. Dill. Nov. Gen. 170. Bastard Jasmine.

The Characters are,

It hath a short tubular Empalement of one Leaf, indented at the Top into five Parts, which are erect. The Flower is Funnel-shaped, of one Petal, having a long cylindrical Tube, which spreads open at the Top, where it is cut into five equal Segments; it hath five slender Stamina the Length of the Tube to which they adhere, and are terminated by roundish four cornered Summits. The oval cylindrical Germen is situated in the Empalement, supporting a slender Style

the Length of the Stamina, crowned by an obtuse thick Stigma. The Germen afterward becomes an oval oblong Berry, with one Cell, inclosing several roundish Seeds.

The Species are,

1. *CESTRUM floribus pedunculatis. Hort. Cliff. 490.* *Cestrum* with Flowers standing upon Foot Stalks. This is the *Jasminoides foliis Pishaminis, flore virescente noctu odoratissimo. Hort. Elth. 183. Tab. 153.* Bastard Jasmine with Leaves of Pishamin, and a greenish Flower, smelling very sweetly in the Night.

2. *CESTRUM floribus sessilibus. Hort. Cliff. 491.* *Cestrum* with Flowers growing to the Branches. This is the *Jasminoides Laureole folio, flore candido interdiu odorato. Hort. Elth. 186.* Bastard Jasmine with a Spurge Laurel Leaf, and a white Flower, smelling in the Day.

3. *CESTRUM foliis lanceolatis oppositis nervis transversalibus, pedunculis ramosis. Cestrum* with Spear-shaped Leaves growing opposite, having transverse Veins, and branching Foot Stalks to the Flowers. This is the *Jasminoides Americanum, lauri folio, flore albo odorato. Houst. Mss.* Bastard Jasmine of America with a Bay Leaf, and a white sweet smelling Flower.

4. *CESTRUM foliis ovato-lanceolatis, floribus spicatis, alaribus & terminalibus. Cestrum* with oval Spear-shaped Leaves, and Flowers growing in Spikes from the Sides and Tops of the Branches.

5. *CESTRUM foliis oblongo-ovatis, obliquis, floribus alaribus confertis, tubo longissimo & tenuissimo. Cestrum* with oblong oval Leaves which are oblique, and Flowers growing in Clusters from the Sides of the Branches, with a very long, slender Tube.

6. *CESTRUM foliis lanceolatis obliquis, floribus alaribus, pedunculis foliosis. Cestrum* with oblique Spear-shaped Leaves, Flowers proceeding from the Sides of the Branches, and leafy Foot Stalks. This is the *Jasminum laurinis foliis, flore pallide luteo fructu atroceruleo polypireno venenato. Sloan. Hist. Fam. 2. p. 196.* Jasmine with Bay Leaves, a pale yellow Flower, and a dark blue Fruit with many Seeds, which are poisonous.

The 1st Sort was many Years past raised in the curious Gardens of the Duchess of Beaufort, at Badmington, in Gloucestershire, and was from thence communicated to several Gardens in England and Holland, where in the latter it passes under the Title of *Badmington Jasmine* to this Time. This grows naturally in the Island of *Cuba*, from whence I received the Seeds by the Title of *Dama de Noche. i. e. Lady of the Night*, which Appellation I suppose was given it from the Flowers sending out a strong Odour after the Sun is set.

It rises with an upright Stalk about six or seven Feet high, which is covered with a grayish Bark, and divides upward into many slender Branches, which generally incline to one Side; these are garnished with Leaves placed alternate, near four Inches long, and one and a Half broad, smooth on their upper Side, of a pale green, and on their under Side they have several transverse Veins of a Sea-green Colour, having short Foot Stalks, the Flowers are produced at the Wings of the Leaves, in small Clusters, standing on short Foot Stalks, each sustaining 4 or 5 Flowers, which have very short Empalements, with long slender Tubes enlarged at the Top, where they are cut into five Parts which are reflexed; these are of an herbaceous Colour; they appear in August, but are not succeeded by Berries

berries in this Country; those I received from *America* were small, and of a dark brown Colour, enclosing several Seeds.

The Seeds of the 2d Sort were sent me from the *Havannah*, by the Title of *Dama de Dio*, or Lady of the Day; this rises 8 or 10 Feet with an upright Stalk covered with a smooth light green Bark, and divides upward into many smaller Branches, garnished with smooth Leaves near three Inches long, and one and a Half broad, of a lively green Colour, and the Consistence of those of the Spurge Laurel; these are ranged alternately on the Branches. Toward the upper Part of the Shoots come out the Flowers from the Wings of the Leaves, standing in Clusters close to the Branches; they are very white, shaped like those of the former Sort, and smell sweet in the Day Time, from whence it had the Appellation of Lady of the Day. The Berries are smaller than those of the 1st Sort. This flowers in *August* and *September*.

The 3d Sort was sent me from *Cartagena*, near which Place it grows naturally; this rises with a shrubby Stalk, 5 or 6 Feet high, covered with a brown Bark, and divides upward into many small Branches, garnished with Spear-shaped Leaves, about four Inches long, and little more than one broad; these are smooth, of a light green, and have many horizontal Veins running from the Midrib to the Sides, and are placed opposite by Pairs. From the Wings of the Leaves, toward the upper Part of the Branches, are produced the Flowers, standing on branching Foot Stalks, each sustaining four or five Flowers, whose Tubes are swelling at their Base just above the Emplacement; but contract upward to the Mouth, where the Petal is cut into five broad Segments spread flat; they are white, but without Scent.

The 4th Sort was sent me with the former. This rises with a shrubby Stalk, ten or twelve Feet high, covered with a light gray Bark, and sends out many Branches the whole Length, garnished with oval Spear-shaped Leaves, standing without Order; they are two Inches and a Half long, and one and a Half broad, of a light green, with slender Foot Stalks. The Flowers come out in loose Spikes from the Side, and at the End of the Branches, which are shaped like those of the 1st Sort, and of a whitish green Colour, without Scent. These are succeeded by roundish purple Berries, the Size of large Peas, which have a soft Juicy Pulp, filled with flat Seeds.

The 5th Sort rises with several shrubby Stalks, eight or ten Feet high, covered with a white smooth Bark, and send out many irregular Branches, garnished with oblong oval Leaves, which at their Base are longer on one Side, so that the Foot Stalk is oblique; they are placed on the Branches without Order, and are of a pale green. The Flowers come out in Clusters from the Side of the Branches, many of them arising from the same Point; these have very slender long Tubes, which are cut at the Top into five acute Segments which are erect. These are of a pale yellow, and without Scent.

The 6th Sort grows naturally in *Jamaica*, from whence it was sent me. This rises with a woody Stem, 8 or 9 Feet high, covered with a smooth whitish Bark, and sends out many Branches toward the Top, garnished with Spear-shaped Leaves, whose Foot Stalks are oblique; they are three Inches long, and little more than one broad, smooth, of the Consistence of Bay Leaves, and are placed alternate on the Branches. From the Wings of the Leaves

the Flowers are produced, most Part of the Length of the Branches; the Foot Stalks of the Flowers are garnished with small Leaves, standing between each Flower in a singular Manner, the Flowers rising one above the other, and between, or opposite to each, is one, and sometimes two Leaves of the same Form with those on the Branches. The Flowers are of a pale yellow, and emit a disagreeable Odour. These are succeeded by oval Berries of a Violet Colour, full of Juice, each containing several flat Seeds reckoned very poisonous, so have the Appellation of Poison Berries in *Jamaica*.

This has been, by many of the Writers on Botany, supposed to be the same with the 1st; but any Person who has seen both Sorts growing, cannot doubt of their being distinct Species, the Shape and Size of the Leaves are very different, as are also their Flowers and Berries. Some have also supposed that the *Parqui* of *Pere Feuillée*, is the same with this; but that is a great Mistake; for the Flowers of his Plant are produced in loose Bunches, at the Extremity of the Branches, whereas those of this Sort, come out from the Side, at the Foot Stalks of the Leaves; so that his Plant is certainly different from either of these, but approaches nearest to the third.

The fifth Sort I take to be the same as *Pere Plumier's Jasminum aliud arborescens, foliis solani, minus*.

The 1st and 2d Sorts produce Flowers every Year in *England*, but the others seldom flower here; but as they retain their Leaves all the Year, they make a pretty Variety in the Stove, during the Winter Season; and when they flower, the Branches are commonly well garnished at their Joints with Bunches of Flowers, so they make a fine Appearance at that Time.

All these Plants grow naturally in very hot Countries, so cannot be preserved in *England*, without artificial Heat; therefore require to be placed in a warm Stove, especially in the Winter. The two first are hardier than the others; these I have kept several Years in a dry Stove, with a moderate Share of Heat in the Winter, and in the Middle of Summer have set them in the open Air, in a warm Situation. With this Management I have found them thrive, and produce Flowers much better than when they have been placed in a greater Heat; but I have often endeavoured to keep these Plants through the Winter, in a Green-house, or a Glass Case, without Fire, but could never succeed; for by the End of *January* they commonly decayed.

The other Sorts require a larger Share of Heat, especially when the Plants are young; therefore they should be plunged in the Tan Bed of the Bark Stove, otherwise they will lose their Leaves in Winter, if they are not quite destroyed; but after three or four Years Growth, they will bear to be treated more hardily, provided they are inured to it gradually.

These Plants may be propagated from Seeds, or by Cuttings. Those from Seeds are always the most vigorous, and straightest Plants; but as they do not produce Seeds in *England*, the other Method is generally practised.

The best Time to plant these Cuttings, is about the End of *May*, by which Time the Shoots will have had Time to recover Strength, after their Confinement during the Winter Season. The Shoots which come out from the lower Part of the Stalks, should always be chosen for this Purpose. These should be cut about four Inches

When the young Plants are fit to remove, they should be carefully shaken out of the Pots, and each planted in a separate Pot filled with Earth as before, and plunged into the hot Bed again, and afterwards treated as hath been directed for the Plants raised from Cuttings.

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Geneva; this hath a perennial Root, from whence comes out in Spring many Leaves, shaped like those of the 1st, but broader, hairy, and more divided. The Stalks rise 3 Feet high, which are channeled, and garnished with the like Leaves; these are terminated by large Umbels, formed of many small ones, composed of white or red Flowers, sometimes both Colours in the same Umbel, having five Heart-shaped Petals, which turn inward; these are succeeded by two long pointed Seeds; the whole Plant has an aromatick Smell and Taste.

The 4th Sort is the Garden Chervil, formerly much more cultivated in the *English* Gardens, than at present; this is an annual Plant, which perishes soon after the Seeds are ripe. The best Time to sow the Seeds is in Autumn, soon after they are ripe, for those sown in Spring rarely come up, and if they do, the Plants never thrive; for as soon as the warm Weather sets in they soon wither and decay, but the Plants which rise in Autumn, continue green all the Winter, and in *April* they flower, soon after which the Seeds ripen, and the whole Plant decays.

The Leaves are frequently used in Soups in Winter and Spring by the *Dutch*, who are great Lovers of this Herb, but whoever makes use of it should be cautious not to take the Leaves of the Annual Myrrhis, instead of this, as some of the *Dutch* Soldiers who were in *England*, in 1745, did, and were poisoned with it.

It will thrive in any Soil, or Situation. The Seeds may be either sown in Drills, or Broad-cast, and require no particular Culture, so may be treated as Parsley.

CHAMÆCERASUS. See *Cerastus* and *Lonicera*.

CHAMÆCISTUS. See *Helianthemum*.

CHAMÆCLEMA. See *Glechoma*.

CHAMÆCYPARISSUS. See *Santolina*.

CHAMÆDAPHNE. See *Ruscus*.

CHAMÆDRYS. See *Teucrium*.

CHAMÆLÆA. See *Cnorum*.

CHAMÆMELUM. See *Anthemis*.

CHAMÆMESPIBUS. See *Mespilus*.

CHAMÆMORUS. See *Rubus*.

CHAMÆNERION. See *Epilobium*.

CHAMÆPITYS. See *Teucrium*.

CHAMÆRHODODENDRON. See *Azalea* and *Kalmia*.

CHAMÆRIPHES. See *Chamærops*.

CHAMÆROPS. *Lin. Gen. Plant.* 1084. *Chamæripbes*. *Dod. Pempt.* 820. Dwarf Palm, or Palmetto.

The Characters are,

It hath male and hermaphrodite Flowers in distinct Plants, the hermaphrodite Flowers are all included in one common Spatba (or Hood) which is compressed and bifid, and the Spadix, or Club, is branching; each Flower hath a small three pointed Empalement; they have one thick upright Petal, which is cut into three Parts, and turns inward at the Top, and five compressed Stamina which join at their Base, terminated by narrow twin Summits, joined to the interior Part of the Stamina. They have three roundish Germen, each having a distinct Style, which is permanent, terminated by pointed Stigma. The three Germen become so many round Berries, having one Cell, each containing a single Seed. The male Flowers are like the hermaphrodite, but the Stamina are not distinct, nor have they any Germen.

The Species are,

1. CHAMÆROPS *frondibus palmatis, plicatis, stipitibus spinosis*. *Hort. Cliff.* 482. Dwarf Palm with folding palmated Leaves, and prickly Foot Stalks. This is the *Palma humilis* f. *Chamæripbes*. *J. B. Hist.* 1. 368. Dwarf Palm, or Palmetto.

2. CHAMÆROPS *foliis flabelliformibus, maximis, stipitibus glabris*. Dwarf Palm with very large Fan-shaped Leaves, and smooth Foot Stalks. This is the *Palma non spinosa humilima*. Dwarf Palm without Spines, commonly called small Palmetto Royal.

The first grows naturally in *Spain*, particularly in *Andalusia*, where, in the sandy Land, the Roots spread and propagate so fast, as to cover the Ground as the Fern in *England*. The Leaves of these Plants are tied together to make Besoms for sweeping.

This never rises with a Stem, but the Foot Stalks of the Leaves rise immediately from the Head of the Root, and are armed on each Side with strong Spines, they are flat on their upper Surface, and convex on their under; to their Ends the Center of the Leaves are fastened, which spread open like a Fan, having many Foldings, and at the Top are deeply divided like the Fingers of a Hand. When they first come out, they are closed together like a Fan when shut, and are fastened together by strong Fibres which run along the Borders of the Leaves, and when the Leaves spread open, these Fibres, or Strings, hang from the Sides and Ends; the Borders of the Leaves are finely sawed, and have white narrow Edgings; these Leaves spread out on every Side of the Plant, they are from 9 to 18 Inches long, and near a Foot broad in their widest Part; as the lower Leaves of the Plants decay, their Vestiges remain, and form a short Stump above Ground, like our common male Fern; from between the Leaves comes out the Spadix, or Club, which sustains the Flowers; this is covered with a thin Spatba, or Hood, which falls off when the Bunches open and divide. As all the Plants of this Sort which I have seen flower were male, so I cannot give any Description of their Frustrification.

This Plant is commonly propagated here by Heads, which separate frequently from the main Root; if these are carefully taken off with Fibres, and planted, they will grow, but the Plants so raised are not so good as those produced from Seeds, so that if good Seeds can be procured, that is by much the better Way to propagate them. The Seeds should be sown in small Pots filled with light sandy Earth, and plunged into a moderate hot Bed of Tanners Bark; these must be refreshed now and then with Water. If the Seeds are fresh, the Plants will come up in six Weeks; they rise with a single long pointed Leaf. When they appear they must be now and then refreshed with Water, but not in too great Plenty. If the Plants are not too close to each other in the Pots, they will not require to be transplanted the first Year, therefore they should remain in the Tan Bed all the Summer, but in warm Weather they must have Plenty of Air admitted to them. In Autumn the Pots should be removed into the Stove, and, if plunged in the Bark Bed the first Winter, it will greatly forward the Growth of the Plants. The following Spring the Plants should be carefully turned out of the Pots, so as to preserve their Roots entire, for all the Sorts of Palms have tender Roots, which if cut off, or broken, frequently kills the Plants;

then they should be each planted in a small Pot filled with light sandy undunged Earth, and plunged into a fresh hot Bed, to encourage their taking Root; the following Summer they should be gradually hardened, by raising the Glasses pretty high, so as to admit a large Share of Air, but they should not yet be wholly exposed to the open Air. The Autumn following the Plants may be placed in a dry Stove, but as they advance and get Strength, may be treated more hardily, and in Summer placed in the open Air in a warm Situation, and in Winter may be preserved in a warm Green-house without artificial Heat.

As the Plants advance in Growth, they should be put into larger Pots, but when this is done, great Care must be taken, that their Roots are not cut or broken, nor should they have Pots too large. In Winter they must have but little Water, but if they are exposed to the open Air in Summer, they will not require much, unless the Season proves very warm and dry, in which Case they may be sparingly watered two or three Times a Week.

The 2d Sort grows naturally in the *West-Indies*, where it never rises with a Stem; the Foot Stalks of the Leaves are rounder than the former, and have no Spines on their Sides. When the Plants are old their Leaves are 3 or 4 Feet long, and upward of two broad; these are folded as those of the first, but the Folds are broader, and the Leaves of a darker green; some of these have put out slender Bunches of male Flowers in *England*, but were too imperfect to form a Description.

This Sort rises freely from Seeds; which may be easily procured from the Islands in *America*; these must be sown as the former, and the Plants treated in the same Way, but as they are Natives of a warmer Climate, should be constantly kept in the Bark Stove, where, if carefully managed, they will make good Progress.

I have received Seeds from *Carolina* of a Dwarf Palm, which is very like this, if not the same, but the Plants do not make so good Progress here, as those which came from *Jamaica*, the Berries were so like, that I could not distinguish them.

CHAMÆRUBUS. See Rubus.

CHAMÆSYCE. See Euphorbia.

CHEIRANTHUS. Lin. Gen. Plant. 730. *Leucojum*. Tourn. Inst. R. H. 220. Tab. 107. Stock Gilliflower and Wall-flower, in French *Girofflier* ou *Violier*.

The Characters are,

It hath a four leaved compressed Empalement; the two outer Leaves are swelling at their Base. The Flower hath four Petals placed in form of a Cross; these are longer than the Empalement. It hath six parallel Stamina, the Length of the Empalement, two of which are between the swelling Leaves of the Empalement, the others are a little shorter, and are terminated by erect bifid Summits, reflexed at the Top. It hath a four cornered prismatic Germen, as long as the Stamina, supporting a very short compressed Style, crowned with an oblong divided Stigma, which is reflexed and permanent. The Germen becomes a long compressed Pod with two Cells, opening with two Valves, filled with compressed Seeds.

The Species are,

1. CHEIRANTHUS foliis lineari lanceolatis dentatiscaule recto, siliquis tetragonis. Cheiranthus with narrow, indented, Spear-shaped Leaves, an upright Stalk, and four-cornered Pods. This is the *Hesperis leucii folio serrata*,

siliqua quadrangula. Tourn. Inst. Dames Violet with a sawed Wall-flower Leaf, and a quadrangular Pod.

2. CHEIRANTHUS foliis lanceolatis integerrimis, caule recto, siliquis tetragonis. Cheiranthus with Spear-shaped entire Leaves, an upright Stalk, and quadrangular Pods. This is the *Hesperis leucii folio non serrato, siliqua quadrangula* Tourn. Inst. Dames Violet with a Wall-flower Leaf not sawed, and a quadrangular Pod.

3. CHEIRANTHUS foliis lanceolatis, acutis, glabris. Hort. Cliff. 334. Cheiranthus with Spear-shaped, pointed, smooth Leaves. This is the *Leucojum luteum vulgare*. C. B. P. Common yellow Wall-flower.

4. CHEIRANTHUS foliis linearibus, unguibus petalorum calyce longioribus. Cheiranthus with narrow Leaves, and the Necks of the Petals longer than the Empalement. This is the *Leucojum angustifolium Alpinum flore sulphureo*. H. R. Par. Narrow leaved Wall-flower of the Alps, with a Sulphur-coloured Flower.

5. CHEIRANTHUS foliis lanceolatis, subdentatis, obtusis, incanis, siliquis cylindricis apice acutis, caule herbaceo. Lin. Sp. Plant. 662. Cheiranthus with Spear-shaped Leaves, somewhat indented, obtuse, and hoary; cylindrical Pods with acute Points, and an herbaceous Stalk. *Leucojum incanum minus*. C. B. P. 200. Lesser hoary Stock Gilliflower, commonly called Ten Weeks Stock.

6. CHEIRANTHUS foliis lanceolatis, integerrimis, obtusis, incanis, siliquis apice truncatis, compressis, caule suffruticoso. Hort. Up. 187. Cheiranthus with very entire Spear-shaped Leaves, obtuse and hoary, compressed Pods with truncated Points, and a shrubby Stalk. This is the *Leucojum incanum majus*. C. B. P. 200. Greater hoary Stock Gilliflower, commonly called the Queen's Stock Gilliflower.

7. CHEIRANTHUS foliis lanceolatis undatis, caule erecto indiviso. Cheiranthus with waved Spear-shaped Leaves, and an upright undivided Stalk. This is the *Leucojum incanum majus Coccineum* Mor. Hist. 2. 240. Greater hoary Stock Gilliflower with a scarlet Flower, commonly called the Brompton Stock Gilliflower.

8. CHEIRANTHUS foliis lanceolatis, integerrimis, obtusis, incanis, ramis floriferis axillaribus, caule suffruticoso. Cheiranthus with hoary, entire, Spear-shaped, obtuse Leaves, Flower Branches proceeding from the Sides, and a shrubby Stalk. This is the *Leucojum album sive purpureum sive violaceum*. Ger. The white, purple, or violet Stock Gilliflower.

9. CHEIRANTHUS foliis lanceolatis, acutis, petiolatis, viridibus, caule suffruticoso. Cheiranthus with Spear-shaped acute green Leaves, Foot Stalks, and a shrubby Stalk. This is the *Leucojum album odoratissimum, folioviridi*. C. B. P. Sweetest white Stock Gilliflower with a green Leaf, commonly called white Wall-flower.

10. CHEIRANTHUS foliis conferto-capitatis, recurvatis, undatis. Lin. Sp. Plant. App. 1198. Cheiranthus with Leaves growing close together in Heads, which turn backward, and are waved.

11. CHEIRANTHUS foliis linearibus, obtusis, incanis, integerrimis, siliquis acuminatis, caule suffruticoso. Cheiranthus with narrow obtuse Leaves, which are hoary, and very entire sharp pointed Pods, and a shrubby Stalk. This is the *Leucojum maritimum angustifolium*. C. B. P. 221. Narrow leaved Sea Stock Gilliflower.

12. CHEIRANTHUS caule diffuso, foliis lanceolatis, sessilibus,

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bus, floribus alternis. Cheiranthus with a diffused Stalk, Spear-shaped Leaves sitting close to the Stalks, and Flowers placed alternate. *Hesperis maritima, supina, exigua.* Tourn. Inst. Low, maritime Dames Violet, commonly called Dwarf, or Virginia Stock Gilliflower.

13. CHEIRANTHUS *foliis lanceolatis, subdentatis, retusis; siliquis apice subulatis.* Hort. Up. 187. Cheiranthus with Spear-shaped Leaves, indented at Bottom, and Pods with Awl-shaped Points. This is the *Hesperis filiquis birsutis flore parvo rubello.* Hort. Eltb. Dames Violet with hairy Pods, and a small redish Flower.

14. CHEIRANTHUS *siliquarum apicibus tridentatis.* Hort. Cliff. 335. Cheiranthus with Pods indented in three Parts at the Point. This is the *Hesperis maritima latifolia siliqua tricuspidate.* Tourn. Inst. R. H. 223. Broad leaved maritime Dames Violet with a three pointed Pod.

15. CHEIRANTHUS *foliis lanceolatis, sessilibus, subdentatis, spicis florum longissimis, siliquis angulatis, caule suffruticoso.* Cheiranthus with Spear-shaped Leaves sitting close to the Stalks, very long Spikes of Flowers, angular Pods, and a shrubby Stalk. This is the *Leucojum Orientale luteum, foliis dentatis, siliquis planis.* Eastern yellow Wall-flower with indented Leaves and plain Pods.

The 1st Sort grows naturally in the South of France, Spain, and Italy; this is annual, and rises a Foot high, with an angular channeled Stalk, which branches upward on every Side; these are garnished with long, narrow, green Leaves, resembling those of the common Wall-flower, but are sharply indented on their Edges, sitting close to the Stalks; at the Extremity of the Branches the Flowers are produced in loose Spikes; these are yellow, having four Petals situated in form of a Cross, greatly resembling those of the common yellow Wall-flower, but have no Scent; these are succeeded by long four cornered Pods filled with brown Seeds. It flowers in June, and the Seeds are ripe in Autumn.

The 2d Sort grows naturally in Hungary and Istria; this is also annual, rising with an upright Stalk, nearly the same Height as the other, but doth not branch out as that. The Leaves are broader, smoother, and not pointed as those of the other; they stand alternately on the Stalk without any visible Foot Stalk, and are of a deep green. The Flowers come out in loose Spikes at the Top of the Stalks; these are small, of a pale yellow without Scent, and are succeeded by four cornered Pods like those of the former. It flowers, and the Seeds are ripe at the same Time with the former.

These two Plants have by some Persons been supposed the same, but I have cultivated them thirty Years, and have never found them alter. If their Seeds are permitted to scatter, the Plants will come up without Care, and will thrive on any Soil or Situation, and upon Walls, or in Rubbish, as the common Wall-flower.

The 2d Sort grows naturally upon old Walls and Buildings, but is cultivated in Gardens for the Fragrancy of its Flowers. When these Plants grow on Walls, or Buildings, they seldom rise more than six or eight Inches high, having very tough Roots, and firm Stalks; the Leaves are short, and sharp pointed, and the Flowers small, but in Gardens the Plants will grow two Feet high, and branch out wide on every Side; the Leaves are broader, and the Flowers much larger, but, in severe Winters, these Plants are frequently killed in Gardens, when those on Walls re-

ceive no Injury, tho' much more exposed to Winds and Frosts; for as these Plants are stunted, and of a firmer Texture, having but little Juice, so the Cold never affects them.

There is a Variety of this with very double Flowers, which is propagated in the Gardens from Slips, planted in Spring, which readily take Root. There is one Sort of this with variegated Leaves, which is preserved in Gardens, but is not quite so hardy as the plain.

The large, yellow, and bloody Wall-flower, are also supposed to be Varieties of this, which have been improved by Culture; and this I am inclinable to believe, having frequently observed many of them degenerate to the common Sort; but although I have many Years sowed the Seeds of the common Sort from the Walls, yet I could never find them alter, except in being larger, but not any of them approached toward the other Varieties. The large bloody Wall-flower frequently rises with double Flowers from Seeds, if they are carefully saved from such Plants as have five Petals; these double Flowers may be propagated by Slips, as the common Sort, but the Plants so raised will not produce so large Spikes of Flowers as those which are propagated by Seeds.

There is also another Variety with double Blood coloured Flowers, whose Petals are shorter and more numerous, approaching nearer to the common double Wall-flower, but much larger. This is called the Old Bloody Wall-flower. It is propagated from Slips, as the other double Sorts. There are some intermediate Varieties of these Flowers, differing in the Size and Colour of their Petals, which the Florists distinguish as different, but they constantly vary from Seeds.

The 4th Sort grows naturally on the Alps, and the Mountains in Italy where it rarely rises above six Inches high; the Leaves are very narrow, and the Flowers grow in close Spikes at the End of the Branches; they are of a pale yellow, or Brimstone Colour, and the Necks of the Petals are much longer than the Empalement; these have but little Scent. When cultivated in Gardens, it grows as large as the common Wall Flower, and makes a finer Appearance, for the Spikes of Flowers are longer, and grow much closer together; but having little Scent, occasioned their being neglected, and at present there are few, if any, of them remaining in the English Gardens. It was titled the Straw coloured Wall Flower by the Gardeners.

The Sorts with single Flowers produce Seeds in Plenty, from which the Plants are raised, but the largest, and deepest coloured Flowers should always be selected for Seeds, because from Seeds carefully saved, there will be fewer of the Plants degenerate. The Seeds should be sown in April, upon poor, or undunged Soil, and when the Plants are fit to remove, they should be transplanted into Nursery Beds, at about six Inches distance each Way, observing to water and shade them until they have taken fresh Root; after which they will require no farther Care, but to keep them clean from Weeds all the Summer, and at Michaelmas they may be transplanted into the Borders of the Flower Garden, where they are designed to remain, that the Plants may get good Roots before the Frost comes on. This is the Method commonly practised with these Flowers; but if the Seeds are sown on poor Land, where they are designed to remain, and not transplanted,

they will thrive, and endure the Frost in Winter, much better than those which are removed; and if sown on Ruins or Rubbish, they will thrive and continue much longer than in good Land; and in such Places, if properly disposed, they will be very ornamental, and their Flowers having a strong Odour, will perfume the Air to a considerable Distance.

The Stock Gilliflowers are distinguished from the Wall-flowers by their hoary Leaves. These agree with each other in their botanical Characters, so are generally included in the same Genus; but the Gardeners remove them to a considerable Distance, and treat them very differently; yet there is so great Affinity between them, that they may be treated in the same Manner, and both will grow equally on old Walls or Ruins.

The 5th Sort is now generally known by the Appellation of ten Weeks Stock; it was formerly titled Annual Stock Gilliflower, which of late has been applied to another Species, which is biennial. This rises with a round smooth Stalk, about a Foot high, dividing into several Branches upward; these are garnished with Spear-shaped hoary Leaves, rounded at their Ends, and placed without Order, sometimes being almost opposite, at others alternate, and frequently three or four together, of unequal Sizes; at the Ends of the Branches the Flowers are produced in loose Spikes, placed alternate; the Empalement is large, erect, and slightly cut into several acute Parts at the Top; the Petals are large and Heart-shaped, spreading open in Form of a Cross; the Pods are long, cylindrical, and have a longitudinal Furrow on one Side, which opens in two Cells, filled with flat roundish Seeds, having a thin Border. It flowers in *July* and *August*, and the Seeds ripen in *October*.

Of this Sort there are the red, the purple, the white, and striped, with single Flowers, and the same Colours with double Flowers; these are very great Ornaments in the Borders of the Flower Garden, in Autumn, when there is a Scarcity of other Flowers; if the Seeds are sown at two or three different Times, the Flowers may be continued in Succession near three Months.

The first Sowing should be about the Middle of *February*, on a very slender hot Bed, just to bring up the Plants, which must be guarded against Frost, and when fit to remove, they should be transplanted into Nursery Beds, at about 3 or 4 Inches distance, observing to water and shade them till they have taken Root, and keep them clean from Weeds; in these Beds they may remain six or seven Weeks to get Strength, and may then be planted into the Borders of the Flower Garden, where they are to remain: If these are transplanted when there is Rain, they will soon take Root, after which they require no farther Care. From these early Plants good Seeds may be expected, therefore some of the finest of each Colour should be marked for Seeds, which, when ripe, should be carefully cut before the Frost pinches it, and the Stalks tied up in small Bundles, and hung up in a dry Room, till the Pods are well dried, when the Seeds may be rubbed out, and preserved for Use.

The 6th Sort is biennial, though when the Seeds are sown early in Spring, the Plants often flower the following Autumn; but these Plants which are so forward, are often killed in Winter; therefore it is much better to sow them in *May*, that the Plants may not grow too rank

the first Season, so will live through the Winter, and produce large Spikes of Flowers the second Year.

This is commonly called the Queen's Stock Gilliflower, by the Gardeners, and differs greatly from the other Sorts, though many of the late Botanists have supposed they were only femal Variations, but from near forty Years Experience in the Culture of these Plants; I can affirm, that the Species here enumerated, do not alter from one to the other, though they frequently vary in the Colour of their Flowers.

It rises with a strong Stalk, which is almost shrubby, a Foot high or more, having oblong, Spear-shaped, hoary Leaves, which are frequently waved on their Edges, and turn downward at their Extremity; from the Stalk is sent out many lateral Branches, garnished with the same shaped Leaves, but smaller; these Side Branches are each terminated by a loose Spike of Flowers, each having an oblong woolly Empalement, and consist of four large roundish Petals, indented at the End. These usually appear in *May* and *June*, but the same Plants frequently continue flowering most Part of Summer. The Seeds ripen in Autumn, and the Plants generally perish soon after; but when any of them grow in dry Rubbish, they will last two or three Years, and become shrubby; those with single Flowers are not worth preserving after they have perfected their Seeds.

The Flowers of this Sort vary in their Colour, some are of a pale red, others of a bright red, and some curiously variegated, but those of the bright red are generally most esteemed. There are always a great Number of double Flowers produced, if the Seeds are well chosen, frequently three in four of the Plants will be double; and as they divide into many Branches, make a fine Appearance during their Continuance in flower.

The 7th Sort is known by the Title of *Brompton* Stock Gilliflower, I suppose from its having been there first cultivated in *England*. This rises with an upright, strong, undivided Stalk, to the Height of two Feet or more, garnished with long hoary Leaves, reflexed, and waved on their Edges, and at the Top form a large Head; out of the Center of these arises the flower Stalk, which, when the Plants are strong, is frequently a Foot and a Half long, putting out two or three short Branches toward the Bottom; the Flowers of this Kind have longer Petals than any of the other Sorts, and are formed into a pyramidal Spike, but those with single Flowers are loosely disposed, because the Flowers having but few Petals, do not fill the Spike, as those do which are double; for these often have so many Petals, as to render each Flower as large and full as small Roses; and when they are of a bright red, make a noble Appearance, being excelled by none of the flowery Tribe; but the Plants of this Sort produce but one Spike, in which it differs from all the other Kinds, and being constant in this Particular, I think is sufficient to establish a distinct Species. This Sort is generally biennial, though many Times the Plants are preserved longer, but they are always stronger the first Year of their flowering, than they will be after; so that the Seeds are sown every Spring, to continue a Succession of flowering Plants.

The 8th Sort is the White Stock Gilliflower, which is of longer Duration than either of the other Sorts; I have frequently had these Plants live three or four Years, which have become shrubby; their Stalks have been three

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Feet high, and branched out on every Side, so as to appear like Shrubs; these seldom send out Flower Stalks from the Center of the Plant, but it is the Side Branches which produce the Flowers, and these Side Branches divide into several other, which is not common to the other Sorts. There are always many double Flowers rise from Seeds of this Sort, when they are well chosen; some Years I have scarce had enough to preserve the Kind. The Varieties of this are few, sometimes a few of the Plants will produce pale Flesh coloured Flowers, and now and then some have been purple; and as that Sort of Stock Gilliflower, which is titled the *Twickenham Purple*, will sometimes come with Flowers variegated with white, so I have been inclinable to think these two may be Varieties from each other; and the rather, because the Plants agree in their external Habit, for neither of these put out Flower Stems from the Center of the Plants, but always on their Side, so that these are undoubtedly a distinct Species from the former.

The 9th Sort is known by the Title of White Wall Flower, among Gardeners and Florists. This rises with a greenish Stalk a Foot high, dividing into many Branches, garnished with narrow, smooth, Spear-shaped Leaves, of a lucid green, and of thicker Consistence than those of any of the other Sorts, and come out without any Order; they are near three Inches long, and about half an Inch broad in the Middle; the Flowers are produced in loose Spikes, at the End of the Branches, which are of a pure white, and have a great Fragrancy, especially in an Evening, or in cloudy Weather; the Flowers are succeeded by oblong compressed Pods, like those of the other Species. There is a Variety of this with double Flowers, which is propagated by Cuttings or Slips, in the same Manner as the double Wall-flowers; but these Plants require Protection from great Rains, and Frost in Winter; so if they are planted in Pots, and placed under a common Frame in Winter, where in mild Weather they may enjoy the free open Air, and covered from hard Rains and Frost, they may be preserved several Years.

Sometimes many double Flowers will come up from Seeds, but not so frequent as some of the other Sorts. I have raised more than one hundred Plants in a Season, without obtaining one double Flower, and from the Seeds of these, have the following Year had more than half the Plants with double Flowers: But this is not to be expected often.

The Seeds of the 10th Sort were sent me by Dr. *Linnaeus*, from *Upsal* in *Sweden*. This Plant rises about six Inches high, with an herbaceous swelling Stalk; the Leaves are produced in Clusters at the Top, which are very hoary, waved on their Edges, have obtuse Points, and sit very close to the Stalk; the Flowers are produced in slender Spikes, from the Side of the Stalk; these are purple, but not so fragrant as the other Sorts; the Pods are woolly, and recurve backward at the End.

All these Sorts flower in *May* and *June*, at which Time they are the greatest Ornament to the Flower Garden, therefore deserve our Care to cultivate them as much as any of the flowery Tribe; but in order to have many double Flowers, there must be great Care taken in the Choice of Plants for Seeds, without which there can be little Hopes of having these Flowers in Perfection. The only sure Way of getting many double Flowers, is to make

Choice of those single Flowers which grow near many double ones; for I have always found those Seeds which have been saved from Plants growing in Beds close to each other, where there happened to be many double Flowers among them, have produced a much greater Number of Plants with double Flowers, than those which have been saved from Plants of the same Kinds, which grew single in the Borders of the Flower Garden; so that there should be a small Bed of each Kind planted on Purpose to save Seeds in the Flower Nursery; or if they are sown there, and the Plants thinned properly when young, they need not be transplanted, for I have always observed the Plants which have come up from scattered Seeds, and have not been transplanted, endure the Frost much better than those which have been removed; for as these Plants send out horizontal Roots from the Bottom of their Stems, which spread near the Surface of the Ground, so when they are transplanted, the Roots are forced downward, out of their natural Direction; and if their Stalks were grown tall before removal, they are generally planted low in the Ground, whereby they are apt to rot, if the Ground is moist, or the Winter should prove wet; therefore where they can be left unremoved, there will be a better Chance of their living through the Winter; and as these Beds need not be of great Extent, so when the Winter proves very severe, it will not be much Trouble or Expence to arch the Beds over with Hoops, and cover them with Mats in frosty Weather, by which Method they may be always preserved.

The Ground where these Seeds are sown, must not have any Dung, for in rich Land the Plants will grow very vigorous in Summer, but the heavy Rains in Autumn, or Frost, will soon destroy them; these Plants will thrive on Rocks, or old Walls, as was before observed; and in such Situations they will live, when all those planted in Gardens are destroyed. The best Time to sow the Seeds is about the Beginning of *May*; and if the Season should prove dry, it will be proper to shade the Beds with Mats every Day, to prevent the Earth from drying too fast, but the Covering must be taken off every Evening, to admit the Dews of Night, and they should be gently watered in the Evening two or three times a Week. When the Plants first appear, with their two Seed Leaves, they are often attacked by Flies, especially in dry hot Seasons; therefore to prevent their destroying the Plants, the Covering should be continued over them during the Heat of the Day, and the Plants frequently refreshed with Water, which will keep them in a growing State, so the Flies will not infest them; for I have always observed, they never attack any Plants unless they have been stunted in their Growth; when the Plants have got Strength, they will be secure from this Danger, so the Coverings may be removed; after this the Plants will require no farther Care but to keep them clean from Weeds, and thinned to the Distance of 9 Inches, or a Foot asunder, that they may have proper Room to grow, and not draw each other up tall and weak. The Plants which are drawn out of these Beds to thin them, may be planted in the Borders of the Flower Garden, where they are designed to remain, and the sooner they are removed, when the Plants have got 6 or 8 Leaves, the more likely they will be to live through the Winter, because their Roots will not have extended far, so cannot be planted deep in the Ground,

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and may take their natural Direction; therefore whenever these Plants are removed, it is always the best Way to do it when they are young.

The farther Care of the Plants which are left in the Beds, will be to cover them in Winter, with Mats, and when they come to flower, all those which are not of good Colours, or whose Flowers are small, should be drawn out so soon as they appear, that they may not impregnate those designed for Seeds with their Farina; but those with double Flowers should by no Means be removed, nor should their Flowers be cut off, but suffered to fade among the single ones, by which the Seeds will be improved; it will also be a sure Method of preserving each Sort in Perfection, to have them separate from each other, in distinct Beds; though I think there is no Danger of any of the Species altering, by the Mixture of their Farina; but their Colours are liable to be changed by it; so that in order to continue those pure, they should not stand too near each other.

The Time for sowing the Seeds before mentioned must be understood to be for the biennial Sorts; for the annual, or ten Weeks Stock Gilliflower, should be for the first Season, sown in *February*, as before directed; and to succeed these, there should be another Parcel sown in *March*; and those who are curious to continue these Flowers late in Autumn, should sow some Seed the latter End of *May*; if these last sown are on a warm Border, where they may be covered, by placing Glasses before them in Winter, or with Mats, they may be continued in flower till *Christmas*; and if some of the Plants are potted, and put under a hot Bed Frame in Autumn, where they may enjoy the open Air in mild Weather, and be screened from hard Rains and Frost; by this Method I have known them flower all the Winter, when it has not been very severe.

There are some who propagate the double Stock Gilliflowers by Slips and Cuttings, which will take Root when properly managed; but the Plants so raised are never so strong as those which come from Seeds, and their Spikes of Flowers are always very short, so have not half the Beauty; therefore it is not worth while to practise this Method, unless for those Sorts which cannot be obtained with any Certainty from Seed.

The 11th Sort grows naturally in the South of *France*, *Spain*, and *Italy*, near the Sea Coast. This rises near a Foot high, with a ligneous Stalk, dividing into many small Branches, garnished with narrow hoary Leaves, entire, and rounded at their Extremity; the Flowers are produced in loose Spikes at the End of the Branches, which are smaller than those of either Sort before mentioned, of a bright red at their first appearing, but fade to a purple before they fall off. The Stalks, Leaves, and the whole Plant is very white, and by its woody Stalks hath the Appearance of a perennial Plant, but it constantly perishes in Autumn. The Seeds of this Sort should be sown in Autumn, on a warm Border where the Plants are designed to remain; when they come up, they will require no farther Care but to keep them clean from Weeds, and thin them where too close. These autumnal Plants will flower early in *June*, so will produce good Seeds; but those sown in Spring will flower in *July* and *August*, so that from these there cannot be any Certainty of having ripe Seeds; however by sowing the

Seeds at two or three different Seasons, there may be a Succession of Flowers continued for three or four Months.

The 12th Sort is commonly sown in Gardens, as an Edging for Borders, but more generally in Patches between taller growing Flowers: It is titled sometimes Dwarf annual Stock Gilliflower, and by others it hath the Appellation of *Virginia* Stock Gilliflower. This seldom rises more than six Inches high; sending out many Branches from the Root, which intermix and grow irregular; these are garnished with Spear-shaped Leaves rounded at their Ends, and sit close to the Branches at their Base; the Flowers come out in loose Spikes at the End of the Branches, which are of a purple Colour, composed of four Petals in Form of a Cross, and are succeeded by slender Pods, like those of the other Sorts. If the Seeds of this Sort are sown in Patches, at two or three different Times, the first in Autumn, the second the latter End of *March*, and the third the End of *April*, or the Beginning of *May*, in the Borders of the Flower Garden, they will make a Variety, when intermixed with other low growing annual Flowers for three Months.

The 13th Sort rises near two Feet high, sending out many upright Branches from the Bottom, thinly garnished with Spear-shaped Leaves, the lower ones being a little indented; the Flowers come out single, at great Distances from each other, toward the upper Part of the Branches; these are small, of a purplish red Colour, and soon fall away, being succeeded by long taper Pods, with Awl-shaped Points. This is an annual Plant, which may be treated as the last mentioned Sort; but it having little Beauty, is not often cultivated.

The 14th Sort grows naturally on the Sea Coasts in *Italy*, *Spain* and *Portugal*. This is also an annual Plant, which branches out from the Root, into many declining Stalks; the lower Leaves are about two Inches long, and three Quarters of an Inch broad, very deeply sinuated on their Edges, and hoary, those on the Stalks are of the same Form, but much smaller; the Flowers are produced from the Side of the Stalks singly, and at the Top in loose Spikes; the Empalements of the Flowers are covered with a white Down, as are also the Ends of the Branches; the Flowers are purple, composed of four Leaves placed in Form of a Cross; the Pods are about three Inches long, taper, woolly, and at their Ends are divided into three Parts, which spread into a Triangle. It flowers in *July*, and when the Season is favourable, the Seeds will ripen in Autumn, but if sown in Autumn, on a warm Border, the Plants will live through the Winter, and will flower early in *June*, so from these good Seeds may be obtained.

The 15th Sort was discovered by Dr. *Tournefort*, in the *Levant*, who sent the Seeds to the Royal Garden at *Paris*, which succeeded, and since has been communicated to most of the curious Gardens in *Europe*. This rises with a shrubby Stalk, more than two Feet high, which divides into many Branches upward; these are thinly garnished with Spear-shaped Leaves, sitting close to the Branches, of a dark green Colour, and a little indented; the Flowers grow in long Spikes from the End of the Branches, which are small, of a pale yellow, without Scent, so is only preserved in Botanick Gardens for Variety. This Plant is biennial, so may be treated as the Stock Gilliflower, or Wall-flower.

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CHELIDONIUM. Tourn. Inst. R. H. 231. Tab. 116. Lin. Gen. Plant. 572. *Cbelidonium majus*. Raii. Meth. Plant. 100. *Glaucium*. Tourn. Inst. Celandine or greater Celandine, in French *Cbelidoine* or *Eclair*.

The Characters are,

The Flower hath a roundish Empalement, composed of 2 concave obtuse Leaves which fall off; it hath 4 large roundish Petals, which spread open and are narrow at their Base; in the Center is situated a cylindrical Germen, attended by a great Number of Stamina, which are broad at Top, and terminated by oblong, compressed, twin Summits. Upon the Germen is situated a bifid Stigma in Form of a Head. The Germen becomes a cylindrical Pod, with one or two Cells, opening with two Valves, and filled with many small Seeds.

The Species are,

1. *CHELIDONIUM pedunculis umbellatis*. Lin. Gen. Plant. 505. Celandine with an umbellated Foot Stalk. This is the *Cbelidonium majus vulgare*. C. B. P. 144. Greater common Celandine.

2. *CHELIDONIUM foliis quinque lobatis, lobis angustis acutè laciniatis*. Celandine whose Leaves are composed of five narrow Lobes, which are cut into many acute Segments. This is the *Cbelidonium majus laciniato flore* Clus. Hist. 203. Greater Celandine with a jagged Flower.

3. *CHELIDONIUM pedunculis unifloris, foliis amplexicaulis sinuatis, caule glabro*. Lin. Sp. Plant. 506. Celandine with single Flowers on the Foot Stalks, sinuated Leaves which embrace the Stalks, and a smooth Stalk. This the *Glaucium flore luteo*. Tourn. Inst. R. H. 351. *Glaucium* with a yellow Flower; and the *Papaver corniculatum luteum*. C. B. P. 171. Yellow horned Poppy.

4. *CHELIDONIUM pedunculis unifloris, foliis sessilibus pinnatifidis, caule hispido*. Lin. Sp. Plant. 506. Celandine with single Flowers upon the Foot Stalks, Leaves set close to the Stalks which have winged Points, and a rough Stalk. This is the *Glaucium hirsutum flore Phœnicio*. Tourn. Inst. R. H. 253. Hairy *Glaucium*, or horned Poppy, with a scarlet Flower.

5. *CHELIDONIUM pedunculis unifloris, foliis semiamplexicaulis, dentatis, glabris*. Celandine with Foot Stalks having a single Flower, and smooth, indented Leaves, which half embrace the Stalks. This is the *Glaucium glabrum flore Phœnicio*. Tourn. Inst. 254. Smooth horned Poppy with a scarlet Flower.

6. *CHELIDONIUM pedunculis unifloris, foliis pinnatifidis, linearibus, caule levi*. Lin. Sp. Plant. 506. Celandine with single Flowers upon the Foot Stalk, many pointed, narrow Leaves, and a smooth Stalk. This is the *Glaucium flore violaceo*. Tourn. Inst. 254. Horned Poppy with a Violet coloured Flower.

The 1st Sort is the common Celandine used in Medicine, and is esteemed aperitive and cleansing, opening Obstructions of the Spleen and Liver, and is of great Use in curing the Jaundice and Scurvey. This grows naturally on the Side of Banks, and in shady Lanes in many Parts of England, so is seldom cultivated in Gardens; for if the Seeds are permitted to scatter, the Ground will be plentifully stored with Plants to a considerable Distance. It flowers in May, at which Time the Herb is in the greatest Perfection for Use.

The 2d Sort is found growing in a few particular Places, where the Seeds have been formerly sown, or the Plants cast out of Gardens. This is by some supposed to be

only a Variety of the 1st, but I have propagated this by Seeds above thirty Years, and have constantly found the Plants the same, and never vary from the 1st, nor have I ever observed the first alter to this. The Leaves of this are divided into narrow long Divisions, which are deeply jagged on their Edges in acute Segments, and the Petals of the Flower are cut into many Parts, in which it differs from the first. If the Seeds of this Sort are permitted to scatter, they will fill the Ground with Plants. They both delight in Shade.

The 3d Sort is known by the Title of Horned Poppy; it was so called from the Resemblance which the Flower bears to the Poppy, and the long Seed Vessel which is like a Horn. It grows naturally upon the sandy and gravelly Shores by the Sea, in many Parts of England, from whence the Seeds have been brought into Gardens, where it is sometimes allowed a Place for Variety. This Plant abounds with a yellow Juice which flows out from every Part when broken. It sends out many thick gray Leaves, deeply jagged; the Stalks are strong, smooth, and jointed, which rise near two Feet high, and divide into many Branches. These are garnished with Leaves at each joint; those on the lower Part of the Stalks are long, broad, and deeply jagged, but the upper Leaves are entire and almost Heart-shaped: They closely embrace the Stalks with their Base, from the Bosom of the Leaves come out the short Foot Stalks of the Flowers, each supporting one large yellow Flower, composed of four broad Petals, which spread open, like the Garden Poppy, in the Center of which are a great Number of yellow Stamina, surrounding a long cylindrical Germen, crowned by an Arrow-pointed Stigma, which is permanent, remaining upon the Top of the horned Seed Vessel, which grows nine or ten Inches long, having a longitudinal Furrow on one Side, where it opens when ripe, and lets out the Seeds. This is a biennial Plant, which flowers the second Year, and perishes soon after the Seeds are ripe.

If the Seeds are permitted to scatter, they will fill the Ground near them with Plants, so that it is not proper for a Flower Garden; but if a few of the Seeds are scattered about in Rock Work, the Plants will rise without Trouble, and in such Places will have a pretty Effect; they will sow themselves, so the only Care they require, is to pull them up when they multiply too fast. It flowers in June and July, and the Seeds ripen in Autumn.

The 4th Sort grows naturally in Spain, Italy, and some Parts of Germany, from whence the Seeds have been brought to England. The Leaves are deeply jagged and hairy, of a pale green, and grow close to the Stalks: Those at the Bottom lie on the Ground, and are broader than those above. The Stalks are a Foot and a Half high, having a single jagged Leaf placed at each joint; these have many Divisions, from their Origin to the Point, which is extended longer than the lower Leaves. The Flowers come out from the Bosom of the Leaves; these are composed of five broad obtuse Petals, which are of a dark scarlet Colour, and soon fall off. In the Center of each is situated an oblong Germen, having no Style, but supports a bifid Stigma; this is attended by a great Number of short Stamina, terminated by obtuse Summits. The Germen becomes a long taper Pod, on the Apex of which the bifid Stigma remains, sitting on the middle Partition, which divides the Pod into two Cells,

Cells, which are filled with small Seeds. The Flower hath an Empalement composed of two hollow Leaves, which are closely set with short Prickles; this falls away, when the Flower is expanded. It flowers in June and July, and the Seeds ripen in Autumn. As the Flowers of this Plant are but of short Duration, they do not make any considerable Figure; but the Foliage of the Plant is very elegant, and might be introduced by Way of Ornament to Furniture with great Advantage, being very picturesque; it may also be wrought into Patterns for Silks, and painted upon Porcelane, where it would have a very good Effect. If the Seeds are sown in Autumn, they will more certainly grow, than those which are sown in Spring; which frequently in dry Seasons do not come up the same Year, or at least not before Autumn; whereas those sown in Autumn, frequently come up soon after, or if not at that Season, do not fail coming up in Spring; and these Plants come early to flower, so that good Seeds may always be obtained from them. They should be sown where the Plants are to remain, and require no other Care but to thin them where too close, and keep them clear from Weeds.

The 3th Sort differs from the 4th, in having broader Leaves, which are not so deeply divided; the whole Plant is smooth, and the Flowers larger, but of the same Colour: This is annual, and is treated as the last.

The sixth Sort grows naturally among the Corn, in some Parts of England. This is also annual, and the Seeds are sown in Autumn, for those sown in the Spring seldom succeed. The Leaves of this Sort are finely jagged, and divided into narrow Segments, somewhat like Buckhorn Plantain; they are smooth, of a lucid green, and commonly opposite. The Stalks rise little more than a Foot high, dividing into two or three Branches upward, garnished with small Leaves of the same Form as these below. The Flowers are sustained by slender Foot Stalks, which come out from the Wings of the Leaves; these are composed of four obtuse Petals, of a violet Colour, in the Center of which is situated a cylindrical Germen, attended by a great Number of Stamina; the Germen becomes a long cylindrical Pod, like those of the other Species. The Flowers of this Plant are very fugacious, seldom lasting above three or four Hours before the Petals drop off, especially in clear Weather. It flowers in May, the Seeds ripen in July, and the Plants soon after perish. If the Seeds are permitted to scatter, the Plants will come up without Care as the others.

CHELONE R. S. Tourn. 1706. Lin. Gen. Plant. 666.

The Characters are, *the Empalement of the Flower is of one Leaf, cut into five Parts, and is permanent; the Flower is of the ringent Kind, having a short cylindrical Tube, which is swollen at the Chaps, where it is oblong, convex above, and plain below; the Mouth is almost closed, the upper Lip is obtuse and indented, the lower Lip is lightly cut in three Parts. It hath four Stamina, which are inclosed in the Backside of the Petal, the two Side ones being a little longer than the other, which are terminated by hairy oval Summits. It hath an oval Germen supporting a slender Style, crowned by an obtuse Stigma; the Germen afterward becomes an oval Capsule having two Cells, which are filled with flat roundish Seeds having a Border.*

The Species are,

1. CHELONE *foliis lanceolatis, acuminatis, sessilibus, obsolete serratis, radice reptatrice.* Chelone with pointed, Spear-shaped Leaves, set close to the Stalks, with small Serratures on their Edges, and a creeping Root. This is the *Chelone Acadensis flore albo.* Tourn. *Art. R. Par.* 1706. *Chelone of Acadia, with a white Flower.*

2. CHELONE *foliis lanceolatis, obliquis, petiolatis, oppositis, marginibus acutè serratis.* Chelone with oblique, Spear-shaped Leaves, growing opposite on Foot Stalks, and their Borders sharply sawed. This the *Chelone floribus speciosis pulcherrimis, colore rosæ Damascenæ.* Clavt. *Flor. Virg.* 71: *Chelone with a very beautiful Flower, the Colour of the Damask Rose.*

3. CHELONE *caule foliisque hirsutis.* Lin. *Sp. Plant.* 611. *Chelone with hairy Stalks and Leaves.* This is the *Digitaria Virginiana, panacis coloni foliis, flore amplo, pallascente.* Pluk. *Mant.* 64. *Virginia Foxglove, with Crowned Allheal Leaves, and a large pale Flower.*

The first Sort grows naturally in most Parts of North America. This is called by *Joscelin*, in his *New England Rarities*, the *Humming Bird Tree*. It hath a thick jointed Root, which creeps under Ground to a considerable Distance, sending up smooth channeled Stalks, which rise about two Feet high, garnished with two Leaves at each Joint, standing opposite without Foot Stalks; these are three Inches and a Half long, and about three Quarters of an Inch broad at their Base, where they are broadest, and diminish gradually to a sharp Point; they have small Serratures on their Edges, which scarcely appear. The Flowers grow on a close Spike at the End of the Stalks, they are white, and have but one Petal, which is tubular, and narrow at the Bottom, but swells upward, almost like the Foxglove Flower; the upper Side is bent over and convex, but the under is flat, and slightly indented in three Parts at the End. When the Flowers fall off, the Germen turns to an oval Capsule sitting in the Empalement, and is filled with roundish compressed Seeds, which have a thin Border. It flowers in August, and when the Autumn proves favourable, the Seeds will ripen in England; but as the Plants propagate so fast by their creeping Roots, the Seeds are seldom regarded. The best Time to transplant the Roots is in Autumn, that they may be well established before the Spring, otherwise they will not flower so strong, especially if the Season proves dry; but if they are removed in Spring, it should not be later than the Middle of March, by which Time their Roots will begin to push out new Fibres. They will thrive in almost any Soil or Situation, but their Roots are apt to grow too far, if not confined, so intermix with those of other Plants; and then their Stalks stand so far distant from each other, as to make but little Appearance; therefore they should be planted in Pots, which will confine their Roots, so that in each Pot, there will be eight or ten Stalks growing near each other, when they will make a tolerable good Appearance. This Plant is very hardy, so is not injured by Cold, but it must have Plenty of Water in hot Weather.

The 2d Sort was discovered in Virginia by Mr. Clayton, who sent it to England. The Roots of this do not creep so far as those of the first, the Stalks are stronger, and the Leaves much broader, and oblique; they are deeply sawed on their Edges, and stand upon short Foot Stalks: The Flowers are of a bright purple Colour, so make a

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finer Appearance. This flowers at the same Time with the first, and is propagated by parting the Roots in the same Manner.

The 3d Sort I received from *New England*: This is like the first Sort, but the Stalks and Leaves are very hairy, and the Flower is of a purer white. It flowers at the same Time, and is treated as the former.

As these Plants flower in Autumn, when there is a Scarcity of Flowers, it renders them more valuable, especially the 2d Sort, whose Flowers make a pretty Appearance, when they are strong; and if some of them have a shady Situation, they will flower later in Autumn.

CHENOPODIA-MORUS. See Blitum.

CHENOPODIUM [*χρησώδιον*, Gr.] *Tourn. Inst. Lin. Gen. Plant.* 272. Goosefoot, or Wild Orach.

The Characters are,

It hath a permanent Empalement, composed of five oval concave Leaves: The Flower hath no Petal, but in the Center it hath five Stamina placed opposite to the Leaves of the Empalement, and of the same Length, terminated by roundish Twin Summits; it hath a round Germen supporting a short double Style, crowned by an obtuse Stigma. The Germen becomes a five cornered Fruit inclosed in the Empalement, containing one roundish depressed Seed.

The Species are,

1. CHENOPODIUM *foliis triangulari-sagittatis, integerimis. Hort. Cliff.* 84. Goosefoot, with Arrow-shaped triangular Leaves which are entire, called *English Mercury*, *All Good*, or *Good Henry*.

2. CHENOPODIUM *foliis integerrimis rhombo-ovatis, floribus conglomeratis. Flor. Succ.* 216. Goosefoot with entire oval rhomboidal Leaves, and Flowers growing in Clusters. This is the *Chenopodium fætidum. Tourn. Inst.* 506. Stinking Orach.

3. CHENOPODIUM *foliis lineari-lanceolatis, planis, integerrimis. Hort. Cliff.* 86. Goosefoot with narrow Spear-shaped Leaves, which are plain and entire. *Chenopodium lini folio villosa. Tourn. Inst.* Goosefoot with a hairy Flax Leaf, called *Belvedere*, or *Summer Cypress*.

4. CHENOPODIUM *foliis oblongis, sinuatis, racemis nudis multifidis. Hort. Cliff.* 84. Goosefoot with oblong, sinuated Leaves, and naked multifid Spikes of Flowers. This is the *Chenopodium ambrosioides folio sinuato. Tourn. Inst.* 506. Goosefoot, like Ambrosia, with sinuated Leaves, commonly called *Oak of Jerusalem*.

5. CHENOPODIUM *foliis lanceolatis, dentatis, racemis foliatis simplicibus. Hort. Cliff.* 84. Goosefoot with Spear-shaped, indented Leaves, and single leafy Spikes of Flowers. This is the *Chenopodium ambrosioides Mexicanum. Tourn. Inst.* 506. Mexican Goosefoot, like Ambrosia, commonly called *Oak of Cappadocia*.

6. CHENOPODIUM *foliis lanceolatis, dentatis, caule fruticoso. Hort. Cliff.* 84. Goosefoot with Spear-shaped indented Leaves, and a shrubby Stalk. *Chenopodium ambrosioides Mexicanum fruticosum. Boerb. Ind. alt.* Shrubby Mexican Orach.

7. CHENOPODIUM *foliis linearibus, teretibus, carnosiss, caule fruticoso. Hort. Cliff.* 86. Goosefoot with narrow, taper, fleshy Leaves, and a shrubby Stalk. This is the *Blitum fruticosum maritimum, vermicularis fruticosum dictum. Raii Syn.* 156. Maritime shrubby Blite, called *Stone Crop Tree*, or shrubby Glasswort.

There are many other Species of this Genus, some of which grow naturally on Dunghills, and the Side of

Ditches in *England*, where they become troublesome Weeds; therefore I have not enumerated them here.

The 1st Sort is found growing naturally in shady Lanes in many Parts of *England*, but it is very doubtful if the Seeds have not been cast out of Gardens originally, because this Plant was formerly cultivated in Kitchen Gardens for Use; and in some of the Northern Counties, the People still preserve it in Gardens as an esculent Herb; which in the Spring Season, they dress in the same Manner as Spinach, for which it is a Substitute. But as the latter is a much better Herb, it has justly obtained the Preference, in all the Countries where the Culture of the Kitchen Garden is understood.

The 2d Sort is very common on Dunghills; it is seldom cultivated, except in some Physick Gardens; for the Markets in *London* are supplied by the Herb Women, who gather it where it grows wild.

The 3d Sort is sometimes cultivated in Gardens; it is a beautiful Plant, naturally disposed to grow very close and thick, and in as regular a Pyramid as if cut by Art. The Leaves are of a pleasant green; and were it not for that, hath so much of the Appearance of a Cypress Tree, that at some Distance it might be taken for the same, by good Judges: The Seeds should be sown in Autumn; and in Spring when the Plants come up, they may be planted into Pots of good Earth, and kept supplied with Water in dry Weather. These Pots may be intermixed with other Plants to adorn Court Yards, &c. where they will appear very handsome, until their Seeds begin to swell and grow heavy, which weigh down and displace the Branches; then the Pots may be removed to some abject Part of the Garden, to perfect their Seeds; which if permitted to fall upon the Ground, will come up the next Spring; so you need be at no more Trouble than to transplant them where you intend they should grow.

The 5th Sort was formerly used in Medicine; but although it still continues in the Catalogue of Simples in the *London Dispensatory*, is seldom used at present. This Plant may be propagated by sowing the Seeds in an open Border of good Earth in Spring, where it will perfect Seeds in Autumn; which, if permitted to shed on the Ground, will arise as the former.

The 4th Sort was brought from *America*, where the Seeds are called Worm Seed; I suppose from some Quality contained in it, which destroys Worms in the Body.

This is raised by sowing the Seed in Spring as the before-mentioned Sorts, and will perfect its Seed in Autumn; after which the Plant decays to the Ground: But if the Root be preserved in Shelter under a common Frame in Winter, the Stalks will rise again the following Spring.

The Leaves of this Plant emit a very strong Odour when bruised somewhat like those of the Ambrosia, for which the Plants are preserved in Gardens, for the Flower hath no Beauty. This grows naturally in *North America*, where it is generally called Worm Seed. It sends up several Stalks from the Root, which rise about two Feet high, and are garnished with oblong Leaves a little indented on the Edges, of a light green, and placed alternately on the Stalks; the Flowers come out from the Wings of the Leaves, on the upper Part of the Branches, in loose Spikes: These appear in *July*, and the Seeds ripen in *September*; which, if permitted to scatter, the Plants will come up in Plenty the following Spring.

when a few of them may be transplanted into Pots filled with Kitchen Garden Earth, to be preserved through the Winter; and the others may be planted in the common Borders, where they will flower and perfect their Seeds; but unless the Winter is very favourable, the Roots will be destroyed.

The Seeds of all the Species of this Genus succeed best if sown in Autumn; for when sown in Spring, they frequently lie a Year, before the Plants come up: Therefore where the Seeds scatter, the Plants will come up much better than those sown by Hand.

The 5th Sort is annual: This also grows naturally in North America, from whence I received the Seeds. It also is a Native of many warm Countries in Europe. This hath many oblong Leaves at the Bottom, which are deeply sinuated on both Sides, somewhat like those of the Oak Tree, from whence it received the Title of *Oak of Jerusalem*. These are purple on their under Side, and when bruised, emit a strong Odour. The Stalks rise about 8 or 9 Inches high, dividing into several smaller Branches. The lower Part of these is garnished with Leaves of the same Shape with those below, but smaller. The Flowers grow in naked loose Spikes, divided into many Parts: they are small, herbaceous, and are succeeded by small round Seeds. This Sort flowers in June and July, and the Seeds ripen in Autumn.

The 6th Sort hath Leaves very like those of the 4th, and hath the same Scent; but this hath a shrubby Stalk, which rises five or six Feet high, and divides into many Branches. It is a Native of America, and will not live through the Winter in England in the open Air. It is easily propagated by Cuttings during any of the Summer Months, which, if planted in a shady Border and duly watered, will soon take Root; and then may be planted in Pots filled with light Earth, and placed in the Shade till they have taken new Root, after which they may be placed with other hardy exotick Plants in a sheltered Situation during Summer; and when the Frosts come on, they must be removed into the Green-house, but they only require Protection from hard Frosts, so should have Plenty of Air in mild Weather.

The 7th Sort grows naturally on the Sea Coast in Devonshire and Cornwall, but is propagated in the Nurseries for Sale. This sends out from the Root many slender shrubby Stalks, which rise near four Feet high, dividing upward into smaller ligneous Branches, which grow erect, and are closely garnished with small taper succulent Leaves, like the lesser Houseleek; these remain all the Year, for which the Shrub is chiefly valued. The Flowers are small, and have no Beauty. This is propagated by Suckers, which it sends out from the Roots in Plenty. It may be transplanted either in Spring or Autumn, and will thrive almost any where.

CHERRY-LAUREL. See *Padus*.

CHERRY-TREE. See *Cerasus*.

CHERVIL. See *Chærefolium*.

CHESTNUT. See *Castanea*.

CHESTNUT, the Horse. See *Esculus*.

CHIONANTHUS, *Lin. Gen. Plant.* 21. the Fringe or Snowdrop Tree. This Name was given to it by Dr. Van Royen, from the Whiteness of its Flowers: The Inhabitants of America, where this Tree is a Native, call it the same; and the Dutch call it *Sneeboom*, i. e. Snow Tree, on the same Account.

The Characters are,

It hath a permanent Empalement of one Leaf, which is erect, and cut into 4 acute Parts; the Flower is of one Petal, divided into four Parts, having a short spreading Tube the Length of the Empalement, and the upper Part is cut into 4 very long narrow Segments, which are erect. It hath two short Stamina, inserted in the Tube of the Petal, terminated by upright Heart-shaped Summits. In the Center is placed the oval Germen, supporting a single Style, crowned by an obtuse trifid Stigma. The Germen becomes a round Berry, with one Cell inclosing one hard Seed.

We have but one Species of this in England, viz.

CHIONANTHUS *pedunculis trifidis trifloris*. *Lin. Sp. Plant.* 8. Snowdrop Tree, or Fringe Tree, with trifid Foot Stalks supporting three Flowers. This is the *Amelanchier Virginiana laurocerasi folio*. *Pet. Hort. Sicc.* 241. *Virginia Amelanchier* with a Laurel Leaf.

This Shrub is common in South Carolina, where it grows by the Side of Rivulets, and seldom is more than ten Feet high: The Leaves are as large as those of the Laurel, but are of a much thinner Substance; the Flowers come out in May, hanging in long Bunches, and are of a pure white, from whence the Inhabitants call it Snowdrop Tree; and from the Flowers being cut into narrow Segments, they give it the Name of Fringe Tree: After the Flowers have fallen away, the Fruit appears, which becomes a black Berry, about the Size of Sloes, having one hard Seed in each.

This Tree is now more common in the curious Gardens in England, than it was formerly; many young Plants being raised from the Seeds brought from America lately: There have also been some Plants propagated by Layers, though they seldom take Root in less than two Years: Nor will they ever take Root, unless well supplied with Water in dry Weather.

The best Way to obtain good Plants, is from the Seeds which must be procured from America, for they never have produced any Fruit in this Country: The Seeds should be sown in small Pots filled with fresh loamy Earth soon after they arrive, and should be placed under a hot Bed Frame, where they may remain till the Beginning of May, when they must be removed to a Situation exposed to the Morning Sun, and screened from the Sun in the Middle of the Day: In dry Weather the Pots must be watered, and kept clean from Weeds; for as these Seeds lie in the Ground a whole Year before the Plants come up, they should not be exposed to the Sun the first Summer, but the following Autumn they should be removed, and placed under a Frame, to protect the Seeds from being injured by the Frost. If the Pots are plunged into a moderate hot Bed the Beginning of March, it will bring up the Plants much sooner than they will otherwise rise; by which Means they will get more Strength the first Summer, and be better able to resist the Cold of the next Winter: While these Plants are very young, they will be in Danger of suffering by severe Frost; but, when they have obtained Strength, they will resist the greatest Cold of our Climate in the open Air; therefore for the two or three first Winters, it will be proper to keep them under Shelter; so that the young Plants may remain in the Seed Pots all the first Summer, and following Winter; but in the Spring before they begin to shoot, they should be shaken out of the Pots, and carefully separated so

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so as not to break off their Roots, and each planted in a small Pot, filled with light loamy Soil, and plunged into a very moderate hot Bed, just to forward their taking fresh Root; then they should be gradually inured to the open Air, and during the following Summer, the Pots should be plunged into the Ground, to prevent the Earth from drying, in a Situation where they may enjoy the Morning Sun, but screened from the great Heat at Noon. During the Summer Season, they will require to be frequently watered, and kept clean from Weeds. The Autumn following, they should be again placed under a hot Bed Frame to screen them from Frost, but they should enjoy the free Air at all Times, when the Weather is mild. The April following, the Plants may be shaken out of the Pots, with the Ball of Earth to their Roots, and planted where they are designed to remain.

This Shrub delights in a moist, soft, loamy Soil, and if planted in a sheltered Situation, will endure the Cold of our Winters very well in the open Air; but in dry Land, it is very subject to decay in warm Seasons.

Where this Shrub grows naturally, it produces great Quantities of Flowers, and seems covered with Snow; but in England it flowers but seldom, and the Bunches of Flowers are produced very thinly, so make but little Appearance.

CHIRONIA. Lin. Gen. Plant. 227.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, cut into five oblong Segments: It hath one Petal, with a roundish Tube the Size of the Empalement, but is divided into five equal Parts above, which spread open: It hath five short broad Stamina, fastened to the Top of the Tube, and terminated by large oblong Summits, which are erect and join together, and after the Flowers drop are spirally twisted. It hath an oval Germen, situated in the Center, supporting a slender declining Style, crowned by a rising Stigma in Form of a Head. The Germen becomes an oval Capsule with two Cells, filled with small Seeds.

The Species are,

1. CHIRONIA frutescens, capsulifera. Lin. Sp. Plant. 190. Shrubby Chironia bearing Capsules. This is the *Centaurium minus Africanum*, *arborescens*, *latifolium*, *flore ruberrimo*. Com. Rar. Pl. 8. Lesser Tree-like African Centaury, with a broad Leaf, and a very red Flower.

2. CHIRONIA frutescens baccifera. Lin. Sp. Plant. 190. Shrubby Berry-bearing Chironia. This is the *Centaurium minus arborescens pulpiferum*. Com. Rar. Plant. 9. Lesser Tree-like Centaury with Seeds surrounded with Pulp.

These Plants grow naturally at the Cape of Good Hope, from whence their Seeds were brought to Holland, and the Plants raised in some of the curious Gardens there, and have since been carried to the Curious in many Parts of Europe. The Seeds of the first Sort were sent me from Paris, by Mr. Richard, Gardener to the King, at Versailles, from which I raised several Plants, which have flowered in the Chelsea Garden several Years, but have not as yet perfected any Seeds.

It hath a fibrous Root, which spreads near the Surface of the Ground. The Stalks are round and inclining to be ligneous, but are of a very soft Texture; these grow from two to three Feet high, having several Branches on every side, which grow erect; these are garnished with succulent Leaves, which are an Inch or

more in Length, and an eighth Part of an Inch broad, ending in an obtuse Point. At the Ends of each Shoot the Flowers are produced, which are tubulous, and spread open at the Top like those of Periwinkle; these are of a bright red Colour, and when there are a large number of the Flowers open on the same Plant, they make a very fine Appearance. In the Center of the Flower is placed an oval Germen, upon which there is fixed a recurved Style, having a blunt Stigma at the Top; this is surrounded by five incurved Stamina, each supporting a large Summit. When the Flowers fall away, the Germen becomes an inflated Capsule, which is filled with small Seeds. The Flowers are produced from June to Autumn and the Seeds ripen in October. This Plant should be placed in an airy Glass Case in Winter, where it may enjoy a dry Air, and much Sun, but will not thrive in a warm Stove, nor can it be well preserved in a common Green-house, because a damp moist Air will soon cause it to rot.

The Seeds should be sown in small Pots filled with light sandy Earth, and plunged into a moderate hot Bed, and must now and then be gently watered; sometimes the Seeds will lie a long Time in the Ground, so that if the Plants do not appear the same Season, the Pots should not be disturbed, but preserved in Shelter till the following Spring, and then plunged into a fresh hot Bed, which will bring up the Plants in a short Time if the Seeds are good. When the Plants are fit to remove, they should be transplanted into small Halfpenny Pots, four or five in each Pot, then plunge the Pots into a moderate hot Bed, and sprinkle them with Water, and shade them every Day from the Sun till they have taken new Root, after which they must have a large Share of Air in warm Weather, to prevent their drawing up weak; when the Plants have obtained some Strength, they must be gradually inured to bear the open Air; but when they are exposed abroad, if there should happen much Rain, the Plants must be screened from it, otherwise it will cause them to rot; when the Plants have filled the Pot with their Roots, they should be parted, and each put into a separate Pot, filled with light sandy Earth, not rich with Dung, placing them in the Shade till they have taken fresh Root, then they may be removed to a warm sheltered Situation, and mixed with such other Plants as require but little Water; in which Situation they may remain till Autumn, when they must be placed in a dry airy Glass Case, and in Winter should have very little Wet, but must enjoy the Sun as much as possible, in mild Weather should have fresh Air admitted to them, but must be protected from Frost; with this Management the Plants will thrive and produce Flowers the second Year from Seed.

The 2d Sort rises with a firmer Stalk than the first, which is round, jointed, and divides upward into a greater Number of Branches; these are garnished with short narrow Leaves, pretty thick and succulent. The Flowers are produced at the End of the Branches, as those of the first, of a fine red Colour, but not half so large; when these fall away, they are succeeded by oval pulpy Berries, in which are included many small Seeds. This Sort continues flowering great Part of Summer and Autumn, and in warm Seasons the Seeds will ripen in England.

It is propagated by Seeds in the same Manner as the First, and the Plants require the same Treatment.

CHIVES, so titled by some, are the Stamina, which support the Summits in the Center of Flowers.

CHIVETS, in French, are the little Offsets from the Roots of Plants, by which they are propagated.

CHONDRILLA. *Lin. Gen. Plant.* 815. *Tourn. Inst.* (Χόνδρος, Gr. a Cartilage), Gum Succory.

The Characters are,

The common Empalement is composed of many narrow cylindrical Scales, which are equal. The Flower is composed of many hermaphrodite Florets, which are uniform, and lie, imbricatum, like Tiles on a House; these have one Petal, which is stretched out on one Side like a Tongue, and are indented at the Top in four or five Parts; they have each five short bairy Stamina, terminated by cylindrical Summits. The Germen is situated under the Floret, having a Style the Length of the Stamina, crowned by two reflexed Stigmas; the Germen becomes a single, oval, compressed Seed, crowned with a single Down, and enclosed in the Empalement.

We have but one Species of this Genus, viz.

CHONDRILLA. *Lin. Hort. Cliff.* 383. Gum Succory. This is the *Chondrilla juncea viscosa arvensis*. C. B. P. 30. Viscous Field Gum Succory with rushy Stalks.

This Plant grows naturally in Germany, Helvetia, and France, on the Borders of the Fields, and is seldom preserved in Gardens, because the Roots are very apt to spread, and become troublesome Weeds; and the Seeds having Down on their Tops, are carried by the Wind to a great Distance, so that the neighbouring Ground is filled with the Plants; the Roots of this strike deep into the Ground, and spread out with thick Fibres on every Side, each of which, when cut, or broken into many Parts will shoot up a Plant, so that when this Plant hath obtained Possession of the Ground, it is very difficult to root out. The Root sends out a great Number of slender Stalks, which at their Bottom are garnished with oblong sinuated Leaves, but those above are very narrow and entire. The Flowers are produced from the Side and Top of the Branches, which are like those of Lettuce, and are succeeded by Seeds of the same Form, crowned with Down. It flowers in July, and the Seeds ripen in September.

The other Species of this Genus which were enumerated in the former Editions, are referred to the *Lactuca* and *Crepis*.

CHRISTMAS FLOWER, or Black Hellebore. See *Helleborus*.

CHRISTOPHORIANA. See *Alea*.

CHRISANTHEMOIDES OSTEOSPERMON. See *Osteospermum*.

CHRYSANTHEMUM. *Tourn. Inst. R. H.* 491. *Lin. Gen. Plant.* 866. *Leucanthemum*. *Tourn. Inst.* 492. [Χρυσάνθεμον, Gr. from χρυσός, Gold, ἄνθος, a Flower, that is to say, Golden Flower,] Corn Marigold.

The Characters are,

It hath a compound Flower, the Rays being composed of female Florets, which are extended on one Side like a Tongue, and are indented in three Parts at the End; these have an oval Germen, supporting a slender Style, crowned by two obtuse Stigmas. The hermaphrodite Flowers which compose the Disk, are Funnel-shaped the Length of the Empalement, but it is divided into five Parts at the Top, which are spread open; these have five short bairy Stamina, terminated by tu-

bular cylindrical Summits, and have an oval Germen, with Style and Stigma like the female; the Germen afterward becomes a single, oblong, naked Seed.

The Species are,

1. CHRYSANTHEMUM foliis amplexicaulibus, supernè laciniatis, infernè dentato-ferratis. *Hort. Cliff.* 416. Corn Marigold with Leaves embracing the Stalks, the upper jagged, and the lower indented like a Saw. This is the *Chrysanthemum segetum*. *Clus. Hist.* Corn Marigold.

2. CHRYSANTHEMUM foliis amplexicaulibus, oblongis, supernè serratis, infernè dentatis. *Hort. Cliff.* 416. Corn Marigold with oblong Leaves, embracing the Stalks, the upper ones being sawed, and the lower indented. This is the *Bellis sylvestris caule folioso major*. C. B. P. 261. Greater wild Daisy with a leafy Stalk.

3. CHRYSANTHEMUM foliis lanceolatis, supernè serratis, utrinque acuminatis. *Hort. Cliff.* 416. Corn Marigold with Spear-shaped Leaves, those above being sawed, and pointed on all Sides. This is the *Bellis major, radice repente, foliis latioribus, serratis*. *Mor.* Greater Daisy with a creeping Root, and broad sawed Leaves.

4. CHRYSANTHEMUM foliis imis spatulato-lanceolatis, serratis, summis linearibus. *Sauv. Monsp.* 87. Corn Marigold with lower Leaves, pointed like a Spear-shaped Spatula, and sawed, and the upper ones linear. This is the *Leucanthemum montanum minus*. *Tourn. Inst.* 492. Lesser Mountain Ox-eye.

5. CHRYSANTHEMUM foliis linearibus, subintegerrimis. *Sauv. Monsp.* 87. Corn Marigold with narrow Leaves, which are entire. This is the *Leucanthemum gramineo folio*. *Tourn. Inst.* 493. Ox-eye with a Grass Leaf.

6. CHRYSANTHEMUM foliis pinnatifidis, laciniis parallelis, integris, caule unifloris. *Lin. Sp. Plant.* 889. Corn Marigold with many pointed Leaves, whose Segments are parallel and entire, and one Flower on each Stalk. This is the *Leucanthemum alpinum, foliis Coronopi*. *Tourn. Inst.* Alpine Ox-eye with a Hartthorn Leaf.

7. CHRYSANTHEMUM foliis pinnatis, inciso-serratis, caule multifloro. *Prod. Leyd.* 174. Corn Marigold with winged Leaves, with sawed Segments, and many Flowers upon a Stalk. This is the *Tanacetum montanum inodorum, minore flore*. C. B. P. 132. Unfavorable Mountain Tanfy with a lesser Flower.

8. CHRYSANTHEMUM foliis pinnatifidis, incis, extrorsum latioribus. *Hort. Cliff.* 416. Corn Marigold with Wing-pointed cut Leaves, whose exterior Parts are broadest. This is the *Chrysanthemum creticum*. *Clus. Hist.* 1. p. 334. Corn Marigold of Crete.

9. CHRYSANTHEMUM foliis imis palmatis, foliolis linearibus, pinnatifidis. *Sauv. Monsp.* 304. Corn Marigold, whose lower Leaves are palmated, and the smaller ones linear, and ending in many Points. This is the *Leucanthemum montanum foliis Chrysanthemi*. *Tourn.* Mountain Ox-eye with Corn Marigold Leaves.

10. CHRYSANTHEMUM fruticosum, foliis linearibus dentato-trifidis. *Hort. Cliff.* 417. Shrubby Corn Marigold with narrow Leaves, having three Points, and indented. This is the *Leucanthemum canariense, foliis Chrysanthemi, Pyrethri sapore*. *Tourn. Inst.* Canary Ox-eye with Corn Marigold Leaves, and the Taste of Pelitory.

11. CHRYSANTHEMUM flosculis omnibus uniformibus, hermaphroditis. *Hort. Cliff.* 417. Corn Marigold, whose Florets are all uniform and hermaphrodite. This is the

Bellis

Bellis spinosa, foliis Agerati, C. B. P. 262. Prickly Daisy with Maudlin Leaves.

12. *CHRYSANTHEMUM foliis linearibus, infernè apice dentatis, supernè integerrimis, pedunculis nudis unifloris*. Corn Marigold with narrow Leaves, those on the lower Part being indented at their Points, the upper entire, and naked Foot Stalks with one Flower.

The 1st Sort is the common Corn Marigold, which grows naturally amongst Corn, and the Borders of Corn Fields in *England*, so is rarely admitted into Gardens, but is inserted to introduce the other Species.

The 2d Sort is the greater Daisy, which stands in the List of medicinal Plants in the *College Dispensatory*; this grows naturally in moist Pastures. It rises with Stalks near two Feet high, garnished with oblong indented Leaves, which embrace the Stalks with their Base. The Stalks are each terminated by one white Flower, shaped like the Daisy, but four Times as large. It flowers in *June*.

The 3d Sort grows naturally in *North America*, but hath been long in the *English* Gardens; the Roots creep far under the Surface, and send up strong Stalks more than three Feet high, garnished with long sawed Leaves, ending in Points; these Stalks divide upward into many smaller, each being terminated by a large, white, radiated Flower; these appear the End of *July* and *August*; it multiplies very fast by its creeping Roots, and will thrive in any Soil or Situation.

The 4th Sort grows naturally upon the *Alps*, and other mountainous Places. I received it from *Verona*, near which it grows in Plenty; this sends up a single Stalk a Foot high, garnished with entire Leaves above, but the under Leaves, are sawed on the Edges. The Stalk is terminated by one large white flower shaped like those of the 3d Sort. It flowers in *June*, and the Seeds ripen in *August*. This Sort may be propagated by Seeds, which, if sown in a shady Border, will come up in about six Weeks, and the Plants when fit to remove, may be transplanted into a shady Border, to remain, and require no other Care but to keep them clean from Weeds.

The 5th Sort grows naturally about *Montpelier*; this hath a perennial Root, from which springs up many narrow Grass-like Leaves, and, between them, Stalks which rise a Foot and a Half high, garnished with leaves the same as those below. The Stalks are each terminated by one large white Flower, with a yellow Disk, or Middle. This flowers in *June*, but rarely perfects Seed in *England*, so is propagated only by parting of the Roots; the best Time for this is in Autumn, that the Plants may get good Root before Winter.

The 7th Sort grows naturally on the *Alps*, and mountainous Places in *Germany*; this sends out upright Stalks, garnished with Leaves cut into many parallel Segments, somewhat like those of Buckhorn Plantain. The Stalks rise a Foot and a Half high, and are each terminated by a single Flower of the same Form with those of the last; it hath a perennial Root, and may be propagated by parting as the other.

The 8th Sort has been many Years cultivated in the Gardens for the Beauty of its Flowers; of this there are single and double white Flowers, and the same with yellow Flowers; as these do not differ from each other in any Thing except the Colour, they are generally esteemed one Species; but this is constant, for I have never found

the Seeds sowed from the white, produce yellow Flowers, nor those of the yellow produce white.

There is also a Variety of these Colours with fistular Florets, which has accidentally risen from Seeds of the other; these are generally titled Quill-leaved *Chrysanthemums*, but as the Seeds sowed from these degenerate to the common Sorts, they do not merit a particular Denomination.

These Plants are esteemed annual, so the Seeds are usually sown upon a slender hot Bed in Spring, and the Plants treated in the same Manner as the *African* Marigold, for the Culture of which we shall refer the Reader to that Article; but as the Plants which rise from Seeds, do many of them produce single Flowers, although the Seeds are sowed from the best double Flowers, therefore many Persons now propagate these from Cuttings, to continue the double Sorts only; these Cuttings, taken from the Plants the Beginning of *September*, and planted in Pots, will readily take Root, and if they are placed under a hot Bed Frame to screen them from the Frost in Winter, letting them have free Air in mild Weather, they will live through the Winter, and in the Spring may be transplanted into the borders of the Flower Garden, where they will flower in *June*, and continue in Succession till the Frost puts a stop to them; by this Method all the Varieties may be continued without Variation, but the Plants propagated this Way by Cuttings will become barren soon, and will not produce Seeds.

The 9th Sort is a perennial Plant, which sends out many Stalks from the Root, which divide into Branches on every Side, and are garnished with pretty thick Leaves, deeply cut into many Segments, like those of the last Sort; these are of a pale green, the Flowers are produced at the End of the Branches, standing upon pretty long, naked Foot Stalks; these are very like those of the common Greater Daisy in Size and Colour. It flowers in *June*, and continues till the End of *September*. This Sort ripens Seeds every Year in *England*, by which the Plant is easily propagated; for if they are sown in Spring on a common Border, the Plants will come up in six Weeks; when these are fit to remove, they may be transplanted into a Nursery Bed at about a Foot Distance every Way, and kept clean from Weeds till Autumn, when they may be removed to the Places where they are to remain. As these Plants extend their Branches pretty far on every Side, they should be allowed at least two Feet room; therefore are not proper for small Gardens, but in large Gardens may have a Place for Variety.

If these Plants are planted in poor dry Land, or upon Lime Rubbish, they will not grow so vigorous as in good Ground, so they will endure the Cold better, and continue longer; for when their Leaves and Branches are replete with Moisture, they are very apt to rot in the Winter, so are seldom of long Duration; but where the Plants have grown from the Joints of old Walls, I have known them continue in Vigour several Years.

The 10th Sort grows naturally in the *Canary Islands*, from whence it was brought to *England*, and has been long an Inhabitant in curious Gardens. It is called by the Gardeners Pellitory of *Spain*, from its warm Taste, much resembling the Taste of that Plant.

This rises with a shrubby Stalk near two Feet high, dividing into many Branches, garnished with pretty thick succulent

succulent Leaves, of a grayish Colour, cut into many narrow Segments, which are divided into three Parts at their Extremity. The Flowers come out from the Wings of the Leaves, standing upon naked Foot Stalks, singly, which greatly resemble those of the common Chamomile; there is a Succession of Flowers upon the same Plants great Part of the Year, for which it is chiefly esteemed. This Plant will perfect Seeds in England, when the Seasons are favourable; but as the Cuttings take Root so easily, if planted during any of the Summer Months, the Seeds are rarely sown.

As this Plant is a Native of warm Countries, it will not live in the open Air in England during Winter; therefore when the Cuttings have made good Roots, they should be each planted in a separate Pot, and placed in the Shade till they have taken fresh Root, then they may be removed to a sheltered Situation, to remain till Autumn, when they must be removed into the Greenhouse to protect them from Frost, but in mild Weather they should have Plenty of free Air, and, during Winter, should be frequently refreshed with Water, but it must not be given in too great Plenty; in Summer they require more Moisture, and should be treated as other hardier Kinds of exotick Plants.

The 11th Sort grows naturally at the Cape of Good Hope, from whence the Seeds were brought many Years past to Holland, where the Plants were first raised, and from thence all Europe has been supplied with it. This rises with a shrubby Stalk about two Feet high, which divides into many slender Branches upward, garnished with oblong Leaves, much indented on their Edges, each Indenture terminating in a soft Spine; these are of a pale green, set close to the Branches. The Flowers are produced on short Foot Stalks from the Wings of the Leaves, toward the upper Part of the Branches; these are globular, and formed of a great Number of hermaphrodite Florets, which are tubular and even, having no Rays, are naked, and of a deep yellow Colour. The Flowers appear in June, and continue till the Frost stops them; this may be propagated by Cuttings as the last, and the Plants treated in the same Way.

The 12th Sort grows naturally about Madrid; this hath a low shrubby Stalk, which seldom rises a Foot high, putting out several slender ligneous Branches, garnished with narrow, pale, green Leaves, those on the lower Part of the Branches are indented at their Extremity in several Parts, but the upper Leaves are entire; from the End of each Branch is produced a naked Foot Stalk, six Inches long, sustaining one radiated Flower, of a Sulphur Colour. The Flowers come out in June and July, but seldom ripen Seeds in England; this Sort must be sheltered under a common Frame in Winter, for unless it proves very favourable, the Plants will not live in the open Air here. It may be propagated by Cuttings in Summer, as the two last Sorts, but these Cuttings do not so readily take Root as those do.

CHRYSOBALANUS. *Lin. Gen. Plant.* 585. *leaco*. *Plum. Nov. Gen.* 44. Cocoa Plum.

The Characters are,

The Empalement of the Flower is of one Leaf, divided into 5 Parts, almost to the Middle. The Flower hath 5 Petals, which spread open, and 10 Stamina; 5 of which are longer than the Petals, the other are shorter, and are terminated by Heart-shaped Summits. In the Center is situated

an oval Germen, supporting a trifid short Style, crowned by obtuse Stigmas. The Germen becomes an oval fleshy Berry, inclosing a Nut with five longitudinal Furrows.

The Species are,

1. CHRYSOBALANUS *foliis ovatis, emarginatis, floribus racemosis, caule fruticoso*. Chrysoalanus with oval indented Leaves, Flowers growing in Bunches, and a shrubby Stalk. This is the *Frutex Cotini ferè folio crasso, in summitate deliquium patiente, fructu ovali cæruleo ossiculum angulosum continente*. The Cocoa Plum.

2. CHRYSOBALANUS *foliis decompositis, foliolis ovatis integerrimis*. Chrysoalanus with decomposed Leaves, whose Lobes are oval and entire. This is the *leaco fructu purpureo*. Plum. *leaco* with purple Fruit.

The 1st Sort grows naturally in the Bahama Islands, and other Parts of America, but commonly near the Sea. It rises with a shrubby Stalk, about eight or ten Feet high, sending out several Side Branches, covered with a dark brown Bark, spotted with white; these are garnished with oval stiff Leavs indented at their Ends, in form of a Heart; these are placed alternately on the Branches from the Wings of the Leaves, and also at the Division of the Branches, the Flowers are produced, which grow in loose Bunches; these are small and white, having ten Stamina in each, five of which stand out beyond the Petals of the Flowers, the other five are shorter, and are terminated by yellow Summits. The Flowers are succeeded by oval Plums about the Size of Damsons; some of these are blue, some red, and others yellow, they have a sweet luscious Taste. The Spaniards in the Island of Cuba make a Conserve of these. The Stone is shaped like a Pear, and has five longitudinal Ridges on it.

The Seeds of the 2d Sort were sent me from Jamaica, with the Title of Plumiers; the Stones were exactly the same Shape of those of the former, but the Plants have Leaves which are compounded of several winged Leaves, branched out opposite, each having six or seven Pair of Lobes. This Sort hath not flowered in England, so I can give no farther Account of it.

As these Trees are Natives of the warm Parts of America, they will not thrive in England, unless kept in a warm Stove. They are propagated by Seeds, which must be obtained from the Countries where the Plants naturally grow; these must be sown in the Spring in small Pots filled with light Earth, and plunged into a hot Bed of Tanners Bark, observing to water the Pots every other Day, if the Bed is warm, but not let them have much at each Time. In six Weeks the Plants will come up, and, if properly managed, will be fit to remove in a Month's Time after, when they should be carefully separated, and each planted in a small Pot filled with light Kitchen Garden Earth, and then plunged into a hot Bed again, observing to shade them from the Sun till they have taken fresh Root, after which they must have Air every Day in Proportion to the Warmth of the Season, and their Waterings during Summer should be frequent, but sparing. In Autumn the Plants must be removed into the Bark Stove, and plunged into the Tan Bed, and in Winter they must not have too much Water, lest it occasions their throwing off their Leaves. In Summer they must have a good Share of Air, but the Plants in the Stove should be constantly treated in the same Manner as other tender Plants from the same Countries.

CHRYSOCOMA.

CHRYSOCOMA. Lin. Gen. Plant. 845. Dillen. Gen. 14. *Coma aurea*. Boerb. 1. p. 121. Goldylocks.

The Characters are,

The common Empalement is imbricated, the Scales are narrow, the outer being convex and pointed; the Flower is composed of many hermaphrodite Florets, which are tubular, equal, and Funnel-shaped, cut into five Parts at the Brim which turn back; these have each five short slender Stamina, terminated by cylindrical Summits; they have an oblong Germen, supporting a slender Style, crowned by two oblong depressed Stigmas. The Germen afterward becomes a single oblong compressed Seed crowned with hairy Down.

The Species are,

1. *CHRYSOCOMA herbacea, foliis linearibus, glabris calycibus laxis.* Lin. Sp. Plant. 841. Herbaceous Goldylocks with narrow smooth Leaves, and loose Empalements. This is the *Coma aurea Germanica linariae folio.* Park. Theat. 688. German Goldylocks.

2. *CHRYSOCOMA herbacea paniculata, foliis lanceolatis trinerviis punctatis, nudis.* Lin. Sp. Plant. 841. Herbaceous Goldylocks with Flowers growing in Panicles, and Spear-shaped Leaves, having three Nerves. This is the *Conyza lini foliis asperis, rigidis, & nervosis floribus luteis umbellatis.* Amman. Rutb. 192. Fleabane with rough, rigid, Flax Leaves, having Nerves, and yellow Flowers growing in Umbels.

3. *CHRYSOCOMA fruticosa foliis linearibus dorso decurrentibus.* Hort. Cliff. Shrubby Goldylocks with very narrow Leaves, whose back Parts run along the Stalks. This is the *Coma aurea Africana fruticans, foliis linariae angustis, major.* Com. Hort. Amst. Greater, shrubby, African Goldylocks with narrow Toad-flax Leaves.

4. *CHRYSOCOMA subfruticosa, foliis linearibus subtus pilosis, floribus ante florescentiam cernuis.* Hort. Cliff. 397. Shrubby Goldylocks with very narrow Leaves, which are hairy on their under Side, and Flowers nodding before they are blown. This is the *Coma aurea foliis linariae angustioribus minor.* Hort. Amst. 2. p. 89. Lesser Goldylocks with narrow Toad-flax Leaves.

5. *CHRYSOCOMA suffruticosa, foliis linearibus recurvis, scabris, ciliatis, floribus erectis.* Lin. Sp. Plant. 841. Shrubby Goldylocks with narrow rough Leaves which are recurved and hairy, and erect Flowers. This is the *Conyza Africana, tenuifolia, subfrutescens, flore aureo.* Hort. Eltb. 104. Tab. 88. Narrow leaved African, shrubby Fleabane with a Golden Flower.

The 1st Sort grows naturally in Germany, France and Italy; this hath a perennial Root, and an annual Stalk; the Stalks rise about a Foot and a Half high, which are round, stiff, and closely garnished with long, narrow, smooth Leaves, which come out without any Order, of a pale green Colour; the upper Part of the Stalk divides into many slender Foot Salks, each sustaining a single Head of Flowers, which are composed of many hermaphrodite Florets, contained in one common Empalement, having very narrow Scales. The Flowers are of a bright yellow, and stand disposed on the Top of the Stalk, in form of an Umbel. These appear in July, and in favourable Seasons are succeeded by Seeds, which ripen in September, soon after which the Stalks decay to the Root, and new ones arise the following Spring.

This Plant is generally propagated by parting the Roots, that being the most expeditious Method; for the seedling Plants do not flower till the second or third

Year. The best time to remove the Plants, and part their Roots, is soon after the Stalks decay in Autumn, that they may get fresh Roots before Winter. It delights in a dry loose Soil, in which it will live in the open Air, and propagate by its Roots very fast, but in strong wet Land, the Roots often rot in Winter.

The 2d Sort grows naturally in Siberia, from whence the Seeds were sent to Petersburg, Part of which I received from the late Dr. Amman: This Plant hath a perennial creeping Root, which spreads on every Side to a considerable Distance, sending up many erect Stalks, garnished with flat Spear-shaped Leaves, ending in Points; these are rough, and have three longitudinal Veins; the upper Part of the Stalks branch out, and form loose Panicles of yellow Flowers, which are larger than those of the former Sort. This Flowers in June and July, and the Seeds ripen in Autumn.

It propagates too fast by its creeping Roots, which often extend two or three Feet every Way, in the Compass of one Year, and interfere with the neighbouring Flowers; but as the Plants will grow in any Soil or Situation, a few Roots may be planted on the Side of extensive rural Walks round the Borders of Fields, where they will require no Care, and their Flowers will make a good Appearance, and continue long in Beauty.

The 3d Sort grows naturally at the Cape of Good Hope. This rises with a ligneous Stalk about a Foot high, dividing into many small Branches, which grow two Feet high, garnished with narrow Leaves, of a deep green, coming out on every Side without Order; the back Part of each Leaf hath a small short Appendix, which runs along the Stalks. The Flowers are produced at the End of the Branches, on slender naked Foot Stalks; these are of a pale yellow, and shaped like those of the former Sorts, but larger. This Plant flowers great Part of the Year, for which it is chiefly esteemed; the Seeds ripen very well in Autumn, which if sown on a common Border of light Earth in Spring, the Plants will come up, and may be transplanted into Pots, to be removed into Shelter in Winter, for these Plants will not live through the Winter, in the open Air in England.

The most expeditious Method of propagating this, is by Cuttings, which, if planted in a common Border, in any of the Summer Months, and covered with Hand Glasses, will easily take Root, if shaded from the Sun, and duly watered: When these have gotten good Roots they should be carefully taken up, and each planted in a Pot, filled with light Earth, placing them in the Shade till they have taken new Root; then they may be exposed with other hardy exoticks till Autumn, when they must be placed in the Green-house during Winter; they should enjoy a large Share of free Air in mild Weather, for they only require Protection from Frost, so must not be too tenderly treated.

The 4th Sort is a Native of the Cape of Good Hope, from whence I received the Seeds; this is a much less Plant than the former, seldom rising above a Foot high; it hath a shrubby Stalk, branching out in the same Manner; the leaves are shorter, and a little hairy; the Flowers are not half so large, of a pale Sulphur Colour, and nod on one Side before they are blown. This also flowers great part of the Year, and ripens Seeds very well; but this is generally propagated as the former, and the Plants require the same Treatment.

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The 5th Sort is also a Native of the same Country as the two former; this hath a low shrubby Stalk, which seldom rises above six Inches high, branching out on every Side; the Leaves come out on every Side the Branches, which are very narrow, short, rough, and reflexed; the Flowers stand single on the Top of naked Foot Stalks, which arise from the upper Part of the Branches; these Flowers are larger than those of the last, and stand erect. This requires the same Treatment as the two former, and is propagated by Cuttings.

CHRYSOPHYLLUM. Lin. Gen. Plant. 233. *Cainito.* Plum. Nov. Gen. 9. Tab. 9. The Star Apple.

The Characters are.

The Empalement is permanent, and consists of five small, roundish concave Leaves; the Flower is composed of five Petals, which spread open, and are cut in the Middle into two Parts; it hath five Stamina placed alternate to the Segments of the Petals and terminated by Heart-shaped Summits: The oval Germen is situated in the Center, supporting a short Style, crowned by an obtuse Stigma. The Germen afterward becomes a large, oval fleshy Fruit, inclosing three or four flat Seeds, having hard Shells.

The Species are,

1. **CHRYSOPHYLLUM** foliis oblongo-ovatis, supernè glabris, subtus ferrugineis, floribus alaribus corymbofis. *Chrysophyllum* with oblong oval Leaves, smooth above, and of an Iron Colour on their under Side, and Flowers growing in a Corymbus from the Sides of the Stalks. This is the *Cainito-folio* subtus aureo, fructu olivæ formi. Plum. Nov. Gen. 10. The Damson Tree.

2. **CHRYSOPHYLLUM** foliis lanceolatis, subtus aureis, floribus racemosis terminalibus. *Chrysophyllum* with Spear-shaped Leaves, of a Gold Colour on their under Side, and Flowers growing in Bunches from the Ends of the Branches. This is the *Cainito-folio* subtus aureo, fructu maliformi. Plum. Nov. Gen. 10. The Star Apple.

These Trees grow naturally in the *West-Indies*, where the first Sort rises from 20 to 30 Feet high, dividing into many Branches, which are garnished with oblong oval Leaves, smooth above, and of an Iron Colour on their under Side; the Flowers come out from the Side of the Branches, at the setting on of the Leaves, in round Clusters which are succeeded by oval, smooth, pulpy Fruit, inclosing three or four hard flat Seeds.

The 2d Sort rises with an upright Trunk to the Height of 30 or 40 Feet, dividing into many slender Branches, garnished with Spear-shaped Leaves, coming out without Order: From the Wings of the Leaves, and Extremity of the Branches, the Flowers are produced in Bunches, which are succeeded by round pulpy Fruit the Size of a Golden Pippin, containing many flat hard Seeds.

The Fruit of both Sorts are very rough and astringent at first, but by lying some Time after they are gathered, become mellow, like the Medlar. The Timber is used in Buildings, and for Shingles to cover Houses.

These Plants are preserved in several curious Gardens for the Beauty of their Leaves whose under Sides shine like Sattin, the upper Sides are of a deep green. The Leaves continue all the Year, so make a very pretty Appearance in the Stove at all Seasons.

These Trees, being Natives of the warmest Parts of the World, cannot be preserved in this country, with-

out being kept in the warmest Stoves; and should always remain in the hot Bed of Tanners Bark, otherwise they will make but little Progress. They are propagated by Seeds, which must be procured from the Places of their Growth; for they do not produce Fruit in Europe. These Seeds must be fresh, otherwise they will not grow; and if they are sent over in Sand, it will preserve them from drying too much; when the Seeds arrive, they must be sown as soon as possible in small Pots filled with light fresh Earth, and plunged into a good hot Bed of Tanners Bark. If the Seeds are good, and the Bed in a proper Temperature of Warmth, the Plants will appear in five or six Weeks; and in about two Months after, will be strong enough to transplant; in doing of which the Plants, with all the Earth, should be shaken out of the Pots very carefully, and separated with their Roots entire, and each planted into a small Pot filled with fresh rich Earth, and plunged again into a hot Bed of Tanners Bark; watering and shading them until they have taken fresh Root. If the hot Bed in which these Plants are plunged, is from Time to Time stirred, and a little fresh Tan added, to renew the Heat when it declines, the Plants will make good Progress; and in three or four Months will be near a Foot high, and may then be shifted into Pots a small Size larger than those they before were in. If these Plants are constantly kept in a warm Bed in the Stove, and shifted twice a Year, to renew the Earth to their Roots, they will thrive very fast, and put out their Side Branches, so as to make a handsome Appearance in the Stove; for though they do not produce either Flowers or Fruit, yet as they keep their Leaves through the Year, which are so very beautiful, they deserve a Place better than most other Plants. The chief Care they require, is to keep them constantly in a proper Degree of Heat, and never to put them into too large Pots; in Winter they should have Water about twice a Week, and in the Depth of it they should not have much at each Time.

These Trees are frequently propagated in the *West-Indies*, by planting their Branches (as I have been informed by Persons of Credit); but I have not heard of their being propagated in England by that Method.

CHRYSOSPLENIUM. Golden Saxifrage.

The Characters are,

The Empalement is divided into four or five Parts, which spread open, are coloured, and permanent. The Flower hath no Petals, but eight or ten Stamina, which are short, erect, and stand opposite to the Angles of the Empalement, terminated by single Summits: The Germen is immersed in the Empalement, supporting two short Styles, crowned by obtuse Stigma. The Germen becomes a Capsule with two Beaks, opening with two Valves, and filled with small Seeds.

The Species are,

1. **CHRYSOSPLENIUM** foliis alternis. Flor. Succ. 317. Golden Saxifrage with alternate Leaves. This is the *Saxifraga aurea foliis pediculis oblongis insidentibus.* Raii Syn. Hist. 206. Golden Saxifrage with Leaves growing upon long Foot Stalks.

2. **CHRYSOSPLENIUM** foliis oppositis. Sauv. Mém. p. 128. Golden Saxifrage with opposite Leaves. This is the *Chrysosplenium foliis amplioribus auriculatis.* Tourn. Inst. 146. Golden Saxifrage with larger eared Leaves.

These two Plants are found growing wild in many Parts

Parts of England, upon marshy Soils and Bogs, as also in moist shady Woods, and are seldom propagated in Gardens; where, if any have Curiosity to cultivate them, they must be planted in very moist shady Places, or they will not thrive. They flower in March and April.

CIBOULS, or CHIBOULS. See Cepa.

CICER, Lin. Gen. Plant. 783. Tourn. Inst. R. H. Tab. 210.

The Characters are,

The Empalement of the Flower is cut into five Segments, four of which lie upon the Standard; the two middle which are the longest are joined, the other is under the Keel. The Flower is of the Butterfly Kind; the Standard is large, roundish, and plain; the Wings are much shorter and obtuse, the Keel is shorter than the Wings, and is sharp pointed. It hath ten Stamina, nine of them being joined and the tenth is separate, terminated by single Summits. It hath an oval Germen supporting a single Style, crowned by an obtuse Stigma. The Germen afterward becomes a turgid swelling Pod of a rhomboidal Figure, inclosing two roundish Seeds, with a Protuberance on their Side.

There is but one Species of this Genus, viz.

CICER foliolis serratis. Hort. Cliff. 370. Chich Pease with sawed Leaves. This is the Ciccr sativum. C. B. P. 347. Garden Chich Pease.

There is a Variety of this with a red Seed, which differs from it in nothing but the Colour.

It is much cultivated in Spain, being one of the Ingredients in their Olios, and is there called Garavance; it is also cultivated in France, but rarely sown in England.

The Plant is annual, shooting out several Stalks from the Root, about two Feet long; these are hairy, and garnished with long winged Leaves of a grayish Colour, composed of 7 or 9 Pair of small roundish Leaves (or Lobes) terminated by an odd one, sawed on their Edges. From the Side of the Branches come out the Flowers, sometimes one, at other Times two together. They are shaped like those of Pease, but are much smaller and white, standing on long Foot Stalks; these are succeeded by short hairy Pods, including two Seeds in each, of the Size of common Pease, but have a little Knob or Protuberance on one Side.

The Seeds may be sown in Spring, as Pease, making Drills with a Hoe, about an Inch and Half deep, in which the Seeds should be sown two Inches asunder, then with a Rake draw the Earth into the Drill to cover the Seeds. The Drills should be made at 3 Feet Distance from each other, that there may be Room for their Branches to spread when the Plants are fully grown, also to hoe the Ground between them, to clean it from Weeds, which is all the Culture they require.

This Plant flowers in June, and the Seeds ripen in August; but unless the Season proves warm and dry, the Plants decay before the Seeds are ripe.

CICHORIUM, Lin. Gen. Plant. 825. Tourn. Inst. R. H. Tab. 272. Succory.

The Characters are,

The Flower hath a common scaly Empalement, which at first is cylindrical, but is afterward expanded; the Scales are narrow, Spear-shaped, and equal. The Flower is composed of many hermaphrodite Florets, which are plain, uniform, and stand circularly, each having one Petal, which is Tongue-shaped, and cut into five Segments. They have five short hairy Stamina, terminated by five cornered cylin-

dricul Summits. The Germen is situated under the Petal, supporting a slender Style, crowned by two turning Stigmas: The Germen afterward becomes a single Seed, inclosed with a Down, and shut up in the Empalement.

The Species are,

1. CICHORIUM sylvestre five officinarum. C. B. P. 126 Wild Succory.

2. CICHORIUM spinosum. C. B. P. Prickly Succory.

3. CICHORIUM latifolium, five endivia vulgaris. C. B. P. 125. Broad leaved Succory, or common Endive.

4. CICHORIUM caule simplici, foliis fimbriatis, crispis. Succory with a single Stalk, and fringed, curled Leaves. This is the Endivia crispa. C. B. P. Curled Endive.

The 1st Sort grows naturally by the Sides of Roads and in shady Lanes, in many Parts of England: This has been supposed to differ from the Garden Succory only by the latter being cultivated; indeed, most of the Writers on Botany, have confounded the two Sorts together; for the Garden Succory described in most of the old Books, I take to be the broad leaved Endive, which is the 3d Sort here enumerated, for I have many Years cultivated both Sorts in the Garden, without finding either of them alter. There is an essential Difference between these, for the wild Succory hath a perennial creeping Root, whereas the other is at most but a biennial Plant; and if the Seeds of the latter are sown in the Spring, the Plants will flower and produce Seeds the same Year, and perish in Autumn, so that it may rather be called annual. The wild Succory sends out from the Roots long Leaves, which are jagged to the Mid-rib, each Segment ending in a Point; from between these arise the Stalks, which grow from 3 to 4 Feet high, garnished with Leaves, shaped like those at the Bottom, but smaller, and embrace the Stalks at their Base. These branch out above into several smaller Stalks, which have the same Leaves, but smaller and less jagged; the Flowers are produced from the Side of the Stalks, which are of a fine blue Colour; these are succeeded by oblong Seeds, inclosed in a Down. It flowers in June and July, and the Seeds ripen in September.

The 2d Sort grows naturally on the Sea Coasts in Sicily and the Islands of the Archipelago. This sends out from the Root many long Leaves, indented on their Edges, and spread flat on the Ground; from between these arise the Stalks, which have very few Leaves, and those small and entire: The Stalks are divided in Forks upward, from between these come out the Flowers, of a pale blue, which are succeeded by Seeds shaped like those of the common Sort; the Ends of the smaller Branches are terminated by Star-like Spines, which are very sharp. This Plant is biennial in England, and in cold Winters is frequently killed. It flowers and seeds about the same Time as the former Sort, and may be treated as the Endive.

The broad leaved Succory or Endive, differs from the wild Sort in its Duration, the Root always perishing after it has ripened Seeds: The Leaves are broader, rounder at the Top, and not lacinated on the Sides as the Leaves of the wild; the Branches are more horizontal, and the Stalks never rise so high.

This Sort is not much cultivated in the English Gardens at present, for the curled Endive being much tenderer, and not so bitter, is generally preferred to it, The broad

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leaved

leaved and curled Endive have been supposed only Varieties from each other, accidentally produced by Culture; but having cultivated both near 40 Years, I could never find they ever altered, otherwise than by the curled Sort coming more or less curled; for the common broad leaved Endive, hath much shorter Leaves than the curled, which are rounded at their Ends; these have only a few slight Indentures on their Edges, and the Stalks grow more erect, having but few Leaves upon them. This Sort, when blanched, is very apt to have a bitter Taste, which has occasioned its being generally neglected in England, but in Italy it is still cultivated in their Gardens.

All the Sorts of Succory are esteemed aperitive and diuretic, opening Obstructions of the Liver, and good for the Jaundice; it provokes Urine, and cleanses the urinary Passages of slimy Humours, which may stop their Passage.

The curled Endive is now much cultivated, being one of the principal Ingredients in the Sallads of Autumn and Winter, for which Purpose it is continued as long as the Seasons will permit. I shall therefore give Directions for managing this Plant, so as to have it in Perfection during the Autumn and Winter Months.

The first sowing of these Seeds is in May, for those sown earlier, generally run up to Seed, before they have arrived to a proper Size for blanching; and it frequently happens, that the Seed, sown in May in rich Grounds near London, will run to Seeds the same Autumn; but in colder Situations, they are not so apt to run up, therefore there should be some Seeds sown about the Middle or latter End of that Month. The second sowing should be about the Middle of June, and the last Time in the Middle of July. From these three different Crops, there will be a Supply for the Table during the whole Season; for there will be Plants of each sowing, very different in their Growth, so that there will be three different Crops from the same Beds.

When the Plants come up they must be kept clean from Weeds, and in dry Weather duly watered, to keep them growing till they are fit to transplant, when there should be an open Spot of rich Ground prepared to receive them, in Size proportionable to the Quantity intended. When the Ground is well dug and levelled, if it should be very dry, it must be well watered to prepare it to receive the Plants; when they should be drawn up from the Seed Bed carefully, so as not to break their Roots, drawing out all the largest Plants, leaving the small ones to get more Strength; which, when they have Room to grow, by taking away the large ones, they will soon do. As the Plants are drawn up, they should be placed with their Roots even, all the same Way, and every Handful as they are drawn, should have the Tops of their Leaves shortened, to make them of equal Length: This will render the planting much easier, than when the Plants are promiscuously mixed, Heads and Tails: Then the Ground should be marked out in Rows at one Foot asunder, and the Plants set ten Inches distant in the Rows, closing the Earth well to their Roots, and let them be well watered; repeat this every other Evening, till the Plants have taken good Root, after which keep them clean from Weeds.

When the Seed Bed has been thus thinned, it should

be well cleaned from Weeds and watered, which will encourage the Growth of the remaining Plants, so that in ten Days or a Fortnight after, another thinning may be made, which should be transplanted in the same Manner. And at about the same Distance of Time, the third and last drawing may be transplanted.

Those Plants which were the first transplanted, will be fit to blanch by the latter End of July at farthest; and if they are properly managed, in three Weeks or a Month they will be sufficiently blanched for Use, which will be as soon as these Sallads are commonly required; for during the Continuance of good Cos Lettuce, few Persons care for Endive in their Sallads; nor, indeed, is it so proper for warm Weather. If any of the Plants should put out Flower Stems, they should be immediately pulled up and carried away, being good for nothing, so should not be left to incommode the neighbouring Plants. As the Quantity necessary for a middling Family is not very great, there should not be too many Plants tied up to blanch at the same Time, therefore the largest should be first tied, and in a Week after those of the next Size; so that there may be three different Times of blanching the Plants, on the same Spot of Ground. But as in some large Families there is a great Consumption of this Herb for Soups, so the Quantities of Plants should be proportionably greater, at each Time of planting and blanching. The Manner of blanching is next to be treated of, in order to this you should provide a Parcel of small Osier Twigs (or Bass Mat) to tie up some of the largest Heads to blanch; which should be done in a dry Afternoon, when there is neither Dew nor Rain to moisten the Leaves in the Middle of the Plants, which would occasion their rotting soon after their being tied up. The Manner of doing it is as follows, viz. You must first gather up all the inner Leaves of the Plant in a regular Order, into one Hand, and then take up those on the Outside that are sound, pulling off and throwing away, all the rotten and decayed Leaves which lie next the Ground; observing to place the Outside Leaves all round the Middle ones, as near as possible to the natural Order of their Growth, so as not to cross each other: Then having got the whole Plant close up in your Hand, tie it up with the Twig, Bass, &c. at about two Inches below the Top, very close; and about a Week after go over the Plants again, and give them another Tie about the Middle of the Plant, to prevent the Heart Leaves from bursting out on one Side, which they are subject to do, as the Plants grow, if not prevented this Way.

In doing this you need only tie up the largest Plants first, and so go over the Piece once a Week, as the Plants increase in their Growth; by which Means you will continue the Crop longer, than if they were all tied up at one Time: For when they are quite blanched, which will be in three Weeks or a Month after tying, they will not hold sound and good above ten Days or a Fortnight, especially if the Season proves wet: Therefore I would advise to sow at three or four different Seasons, to have a Supply as long as the Weather will permit. But in order to this, you must transplant all the Plants of the last sowing under warm Walls, Pales, or Hedges, to screen the Plants from Frost; and if the Winter should prove very sharp, cover them with Pease

Haulm,

Haulm, or such other light Covering, which should be constantly taken off in mild Weather: These Borders should also be as dry as possible, for these Plants are very subject to rot, if planted in a moist Soil in Winter.

Although I before directed tying up the Plants to blanch them, yet this is only to be understood for the two first Sowings; for after October, when the Nights begin to be frosty, those Plants which are so far above Ground will be liable to be much prejudiced thereby, especially if they are not covered in frosty Weather; therefore the best Method is, to take up your Plants of the latter Sowings in a very dry Day, and with a large flat pointed Dibble, plant them into the Sides of Trenches of Earth, which should be laid very upright, sideways, towards the Sun, with the Tops of the Plants only out of the Ground, so that the hasty Rains may run off, and the Plants be kept dry, and secured from Frosts.

The Plants thus planted, will be blanched fit for Use in about three Weeks or a Month's Time, after which it will not keep good long; you should therefore continue planting fresh ones into Trenches every Week or Fortnight at farthest, to Supply the Table; and those which were last transplanted out of the Seed Beds, should be preserved till February or March, before they are planted to blanch; so that from this you may be supplied until the Beginning of April, or later: For at this last Planting into the Trenches, it will keep longer than in Winter, the Days growing longer; and the Sun, advancing with more Strength, dries up the Moisture much sooner than in Winter, which will prevent the rotting of these Plants.

When your Endive is blanched enough for Use, you must dig it up with a Spade; and having cleared it from all the Outside green and decayed Leaves, wash it well in two or three different Waters to clear it the better from Slugs, and other Vermin, which commonly shelter themselves among the Leaves, and then you may serve it up to the Table with other Sallading.

In order to have a Supply of good Seeds for the next Season, look over those Borders where the last Crop was transplanted, before you put them into the Trenches to blanch; and make Choice of some of the largest, soundest, and most curled Plants, in Number according to the Quantity of Seeds required: For a small Family, a dozen of good Plants will produce Seeds enough; and for a large, two dozen or thirty Plants.

These should be taken up and transplanted under a Hedge or Pale, at about 18 Inches Distance, in one Row about ten Inches from the Hedge, &c. This Work should be done the Beginning of March, if the Season is mild, otherwise it may be deferred a Fortnight longer. When the Flower Stems begin to advance, they should be supported with a Packthread fastened to Nails driven into the Pale, or to the Stakes of the Hedge, and run along before the Stems, to draw them upright close to the Hedge or Pale, otherwise they will be liable to break with the strong Winds. Observe also to keep them clear from Weeds, and about the Beginning of July your Seeds will begin to ripen; as soon as you find they are quite ripe, cut off the Stalks, and expose them to the Sun upon a coarse Cloth to dry; then beat out the Seeds, which must be dried, and put in Bags of Paper, and preserved for Use in some dry Place. But

I would here caution you, not to wait for all the Seeds ripening upon the same Plant; if so, all the first ripe and best of the Seeds will scatter and be lost before the other are near ripe; so great a Difference is there in the Seeds of the same Plant being ripe.

The wild Succory (of which there are some Varieties in the Colour of the Flowers) is seldom propagated in Gardens; it growing wild in Lanes and Dunghills in divers Parts of England, where the Herb Women gather it, and supply the Markets for medicinal Use.

CICUTA properly signifies an Hollow between two Knots, of the Stalks or Reeds; of which the Shepherds used to make their Pipes, as Virgil sings;

*Est mihi disparibus septem compacta Cicutis
Fistula*—

CICUTA. Lin. Gen. Plant. 316. *Sium Raii* Syn. 212. Water Hemlock.

The Characters are...

It is a Plant with an umbellated Flower; the principal Umbel is composed of several smaller (called Rays;) these are equal, roundish and bristly: The great Umbel hath no Involucrum, but the smaller have, which are composed of many short Leaves. The Flowers have each five oval Petals nearly equal, which turn inward; they have five hairy Stamina, which are longer than the Petals, terminated by single Summits. The Germen is situated below the Flower, supporting two slender Styles, which are permanent and longer than the Petals, crowned by Stigmas in Form of a Head. The Germen afterward becomes a roundish channelled Fruit divided in two Parts, containing two oval Seeds, plain on one Side and convex on the other.

The Species are,

1. CICUTA umbellis folio oppositis, petiolis marginatis obtusis. Lin. Sp. Plant. 255. Hemlock with Umbels opposite to the Leaves, and obtuse, marginated Foot Stalks. This is the *Siumerucæ folio*. C. B. P. 154. *Sium* with a Rocket Leaf. And the *Cicuta aquatica* Gesneri. J. B. III. Water Hemlock of Gesner.

2. CICUTA foliorum serraturis mucronatis, petiolis membranaceis, apice bilobis. Lin. Sp. Plant. 256. Hemlock with pointed Serratures to the Leaves, and membranaceous Foot Stalks ending in two Lobes. This is the *Angelica Virginiana foliis acutioribus, semine striato minore, cumini sapore & odore*. Mor. Hist. 3. p. 281. *Virginia Angelica* with pointed Leaves, and a small channelled Seed, having the Taste and Smell of Cumin.

The 1st Sort grows naturally in standing Waters in England, so is never propagated; for unless there is a considerable Depth of Water for the Plants to root in, they will not grow; I have several Times transplanted them into Ponds, where they have grown one Summer, but have not continued through the Winter.

It grows near 4 Feet high, with a branching hollow Stalk, garnished with winged Leaves: The Stalks are terminated by Umbels of yellowish Flowers, succeeded by small channelled Seeds like those of Parsley. It flowers in June and July; the Seeds ripen in Autumn.

The 2d Sort grows naturally in North America, from whence the Seeds have been brought to England, where the Plants are preserved in Botanic Gardens for Variety. This is propagated by Seeds, sown in Autumn, in a shady Border, where the Plants will come up in Spring, and require no Care but to keep them clean.

CICUTARIA. See Ligusticum.

CINARA. See Cynara.

CINERARIA. See Othonna.

CIRCEA, Lin. Gen. Plant. 24. Tourn. Inst. R. H. 301. Tab. 155. Enchanter's Nightshade.

The Characters are,

The Empalement of the Flower is composed of two oval concave Leaves: The Flower hath two Heart-shaped Petals, which are equal and spread open; it hath two erect hairy Stamina, terminated by roundish Summits. The Germen is situated under the Flower, supporting a slender Style, crowned by an obtuse bordered Stigma: The Empalement becomes a rough oval Capsule with two Cells opening Lengthways, each containing a single oblong Seed.

The Species are,

1. CIRCEA caule erecto, racemis pluribus. Lin. Sp. P. 9. Enchanter's Nightshade, with an upright Stalk and many Spikes of Flowers. This is the *Circea lutetiana*. Lob. Icon. 266. Common Enchanter's Nightshade.

2. CIRCEA caule ascendente, racemo unico. Lin. Sp. Plant. 9. Enchanter's Nightshade, with an ascending Stalk and a single Spike. This is the *Circea minima*. Col. p. 2. 80. Least Enchanter's Nightshade.

The 1st Sort grows naturally in shady Woods, and under Hedges, in England. This Plant hath a creeping Root, by which it multiplies greatly. The Stalks are upright, and rise a Foot and Half high, garnished with Heart-shaped Leaves placed opposite, upon pretty long Foot Stalks: These are of a dark green on their upper Side, and pale on the under Side. The Stalks are terminated by loose Spikes of Flowers, branched out into three or four small Spikes. The Flowers are small and white, having but two Petals, opposite to which are situated the two Stamina. After the Flowers fall away, the Empalement of the Flower becomes a rough Capsule, inclosing two oblong Seeds.

The 2d Sort grows at the Foot of Mountains, in Germany; it also grows naturally in a Wood near the Hague, from whence I brought it to England. This Sort rises six Inches high, with a slender Stalk, garnished with Leaves shaped like those of the former Sort, but smaller, and indented on their Edges. The Flowers are produced on single loose Spikes at the Top of the Stalks, which are smaller than the former Sort, but of the same Form and Colour. These Plants flower in June, and their Seeds ripen in August; they both multiply exceedingly by their creeping Roots, so are seldom kept in Gardens, unless for Variety.

If the Roots are planted in any shady moist Part of a Garden, they will increase fast enough without Care.

CIRCULATION of the Sap. See Sap.

CIRRI are those fine Strings, or Fibres put out from the Stalks of Plants, by which they fasten themselves to Walls, Pales, or Trees, for Support, as Ivy, &c.

CIRSIIUM. See Carduus.

CISSAMPELOS. Lin. Gen. Plant. 993. *Caapeba*. Plum. Nov. Gen. 33. Tab. 29.

The Characters are,

It is male and female in different Plants; the male Flowers have an Empalement of one Leaf, divided into four Parts; they have no Petals, but a single Style rises in the Center, which extends beyond the Empalement, terminated by a large Summit, having four Lobes. The female Flowers

have an Empalement like the male, and instead of Petals, there are four Nectariums standing round the oval Germen, which is hairy, and afterward becomes a succulent Berry, inclosing a single Seed.

The Species are,

1. CISSAMPELOS foliis peltatis cordatis subtus villosis, floribus racemosis alaribus. *Cissampelos* with Target Heart-shaped Leaves which are hairy, and Flowers growing in Bunches rising from the Sides of the Stalks. This is the *Caapeba folio orbiculari*, & *umbilicato laevi* Plum. *Caapeba* with a round smooth umbilicated Leaf.

2. CISSAMPELOS foliis cordatis, tomentosis, floribus racemosis, alaribus. *Cissampelos* with woolly, Heart-shaped Leaves, and Flowers growing in Bunches from the Sides of the Stalks. *Caapeba folio orbiculari non umbilicato*. Plum. Nov. Gen. 33. *Caapeba* with a round Leaf not umbilicated, called Velvet Leaf in America.

These Plants grow naturally in the warmest Parts of America, where they twist about the neighbouring Shrubs, and rise five or six Feet. The first Sort hath round Heart-shaped Leaves, whose Foot Stalks are set within the Base of the Leaf, resembling an ancient Target; these are hairy on their under Side, and have pretty long slender Foot Stalks. Toward the upper Part of the Stalks, the Flowers come out from the Wings of the Leaves; those of the male Plants grow in short Spikes or Clusters, and are of a pale herbaceous Colour; but the female Flowers are produced in long loose Racemi from the Side of the Stalks, and are succeeded by a single pulpy Berry inclosing a single Seed.

The 2d Sort hath round Heart-shaped Leaves, extremely woolly and soft to the Touch; these have their Foot Stalks placed at the Base, between the two Ears; the Flowers come out in Bunches from the Side of the Stalks, as the first. The Stalks and every Part of the Plant, is covered with a soft woolly Down.

The Seeds of both these Plants were sent me from Jamaica, and succeeded in the Chelsea Garden, where the Plants produced their Flowers for several Years; and the Fruit of the first Sort were produced, but these would not grow, though they seemed to be perfectly ripened; but they grew at some Distance from the male Plants, so were probably not impregnated.

These Plants are propagated by Seeds, which should be sown upon a hot Bed in the Spring; and the Plants must afterward be treated in the same Way as other tender Exoticks, keeping them constantly in the Bark Stove, otherwise they will not live in this Country.

The first Sort is supposed to be the *Pareiira*, whose Root has been so much esteemed as a Diuretick.

CISTUS. Lin. Gen. Plant. 598. Tourn. Inst. R. H. 259. Tab. 136. Rock-rose.

The Characters are,

The Flower hath a five leaved Empalement which is permanent, two of the middle alternate Leaves being smaller than the other. The Flower hath five large roundish Petals which spread open; it hath a great Number of hairy Stamina, which are shorter than the Petals, and are terminated by small roundish Summits. In the Center is situated a roundish Germen supporting a single Style the Length of the Stamina, crowned by a plain orbicular Stigma: The Germen becomes an oval close Capsule, having in some five, and others ten Cells, filled with small roundish Seeds.

The

The Species are,

1. *CISTUS arborescens foliis ovatis, sessilibus, utrinque, villosis, rugosis, floribus umbellatis terminalibus.* Tree Rock-rose with oval Leaves growing close to the Branches, which are hairy and rough, and Flowers growing in an Umbel at the End of the Branches. This is the *Cistus mas major, folio rotundiore*. *J. B.* Greater male *Cistus*, or Rock-rose, with a rounder Leaf.
2. *CISTUS arborescens foliis sessilibus, utrinque villosis, rugosis: inferioribus ovatis basi connatis, summis lanceolatis.* *Hort. Cliff.* 205. Tree Rock-rose with Leaves set close to the Branches, which are hairy and rough on each Side, the under being oval and joined at their Base, but the upper Spear-shaped. *Cistus mas folio longiore incano.* *J. B.* Male *Cistus* with a longer hoary Leaf.
3. *CISTUS arborescens, foliis ovato-lanceolatis, basi connatis, hirsutis, rugosis, pedunculis florum longioribus.* Tree Rock-rose with oval Spear-shaped Leaves joined at their Base, which are hairy and rough, and longer Foot Stalks to the Flowers. This is the *Cistus mas, folio brevior.* *C. B. P.* Male *Cistus* with a shorter Leaf.
4. *CISTUS arborescens, foliis ovatis, obtusis, villosis, subtus nervosis rugosis, floribus amplioribus.* Tree Rock-rose, with oval, obtuse, hairy Leaves, which are nervous and rough on their under Side, and larger Flowers. *Cistus mas Lusitanicus, folio amplissimo incano.* *Tourn.* Male Portuguese *Cistus* with a very large hoary Leaf.
5. *CISTUS arborescens villosus, foliis lanceolatis, viridibus, basi connatis, floribus alaribus & terminalibus sessilibus, calycibus acutis.* Hairy Tree Rock-rose with green, Spear-shaped Leaves joined at their Base, Flowers proceeding from the Sides and Ends of the Branches, and sitting close, and sharp pointed Empalements.
6. *CISTUS arborescens foliis lanceolatis, supra levibus, petiolis basi coalitis vaginantibus.* Tree Rock-rose with Spear-shaped Leaves, smooth on their upper Side, and their Foot Stalks joining like Sheaths. *Cistus ladanifera Hispanica incana.* *C. B. P.* Spanish hoary Gum *Cistus*.
7. *CISTUS arborescens foliis oblongis, tomentosis, incanis, basi connatis, supra levibus inferne nervosis.* Tree Rock-rose, with oblong hoary woolly Leaves joined at their Base, and smooth above, but nervous on their under Side. This is the *Cistus mas folio oblongo incano.* *C. B. P.* 464. Male *Cistus* with an oblong hoary Leaf.
8. *CISTUS frutescens, ramis patulis, foliis ovatis petiolatis, hirsutis, pedunculis nudis.* Shrubby Rock-rose, with spreading Branches, oval, hairy Leaves having Foot Stalks, and the Foot Stalks of the Flowers naked. This is the *Cistus fœmina, folio salviae, supina humisparsa.* *C. B. P.* Low spreading female *Cistus* with a Sage Leaf.
9. *CISTUS arborescens, foliis ovato-lanceolatis, hirsutis, marginibus undulatis, floribus terminalibus.* Tree Rock-rose with oval, Spear-shaped, hairy Leaves, waved on their Borders, and Flowers terminating the Branches. *Cistus ladanifera Cretica flore purpureo.* *Tourn.* Gum bearing *Cistus* of Crete with a purple Flower.
10. *CISTUS fruticosus, foliis lineari-lanceolatis, hirsutis, sessilibus, floribus terminalibus.* Shrubby Rock-rose with narrow Spear-shaped, hairy Leaves sitting close to the Branches, and Flowers terminating the Stalks. This is the *Cistus ledon foliis oleæ sed angustioribus.* *C. B. P.* 167. Gum *Cistus* with an Olive Leaf, but narrower.
11. *CISTUS arborescens, foliis lanceolatis, acutis, subtus*

incanis, petiolatis, supra glabris, petiolis basi connatis. Tree Rock-rose, with Spear-shaped, pointed Leaves, white on their under Side, and having Foot Stalks, but smooth above, and having the Foot Stalks joined at their Base. This is the *Cistus ledon foliis laurinis.* *C. B. P.* 476. Gum *Cistus* with Bay Leaves.

12. *CISTUS foliis oblongo-cordatis, glabris, petiolis, longioribus, caule fruticoso.* Rock-rose with oblong, Heart-shaped, smooth Leaves, longer Foot Stalks, and a shrubby Stalk.

13. *CISTUS arborescens, foliis lanceolatis, sessilibus utrinque villosis, trinerviis, alis nudis.* *Hort. Cliff.* 205. Tree Rock-rose with Spear-shaped Leaves sitting close to the Branches, hairy on both Sides, and having three Nerves. This is the *Cistus ladanifera Monspeliensium.* *C. B. P.* 467. Gum *Cistus* of Montpellier.

14. *CISTUS arborescens, foliis lineari-lanceolatis, subtus incanis, trinerviis, petalis subrotundis.* Tree Rock-rose with narrow Spear-shaped Leaves, hoary on their under Side, and having three Nerves, with roundish Petals. This is the *Cistus ladanifera Hispanica, salicis folio, flore albo, macula punicante insignito.* *Tourn. Inst. R. H.* 260. Spanish Gum bearing *Cistus*, with a Willow Leaf, and a white Flower spotted with purple.

15. *CISTUS foliis lanceolatis, superne glabris, inferne incanis, trinerviis, margine undulatis, caule fruticoso.* Rock-rose with Spear-shaped Leaves, which are smooth on their upper Side and hoary on their under, having three Nerves, waved Edges, and a shrubby Stalk. This is the *Cistus ledon latifolium Creticum.* *J. B.* 2. 9. Broad leaved Gum *Cistus* of Crete.

16. *CISTUS arborescens foliis oblongo-cordatis acuminatis sessilibus nervosis.* Tree Rock-rose with oblong, Heart-shaped, pointed Leaves, having Nerves, and sitting close to the Branches. This is the *Cistus ledon foliis populi nigrae major.* *C. B. P.* 467. Gum *Cistus* with the larger black Poplar Leaf.

17. *CISTUS foliis ovatis, incanis, inferne petiolatis, superne coalitis, caule fruticoso.* Rock-rose with oval, hoary Leaves, those beneath having Foot Stalks, and the upper ones joined at their Base, and a shrubby Stalk. This is the *Cistus Halimi, folio 1. Clus. Hist.* 1. p. 71. *Cistus* with Sea Purslain Leaves.

18. *CISTUS foliis lineari-lanceolatis, incanis, sessilibus, floribus racemosis caule fruticoso.* Rock-rose with narrow Spear-shaped Leaves, which are hoary, and sit close to the Branches, Flowers growing in Clusters, and a shrubby Stalk. *Cistus folio Halimi longiore incano.* *J. B.* *Cistus* with the longer, hoary, Sea Purslain Leaf.

These Plants all grow naturally in the South of France, in Spain, and Portugal, from whence their Seeds have been brought to England, where many of the Sorts are now cultivated in the Nurseries for Sale. The first Sort hath a strong woody Stem, covered with a rough Bark, which rises three or four Feet high dividing into many Branches, so as to form a large bushy Head; these are garnished with oval hairy Leaves, placed opposite, and sit close to the Branches, having several smaller Leaves of the same Form rising from the same Joint. The Flowers are produced at the End of the Branches, four or five standing together, almost in Form of an Umbel, but rarely more than one is open at the same Time; these are composed of five large roundish Petals of a purple Colour,

Colour, which spread open like a Rose, having a great Number of Stamina, surrounding the oval Germen in the Center, terminated by small, roundish, yellow Summits; these Flowers are of but short Duration, generally falling off the same Day they expand; but there is a Succession of fresh Flowers every Day for a considerable Time. After the Flowers are past, the Germen swells to an oval Seed Vessel, sitting in the Empalement, which is hairy; these Capsules have ten Cells, which are full of small roundish Seeds. This Sort flowers in *May* and *June*, and the Seeds ripen in Autumn; there is generally more Flowers produced in *September* and *October* if the Autumn proves favourable, and where the Plants are protected from Frost, they frequently produce some all the Winter Season.

The 2d Sort differs from the 1st in the Shape of the Leaves, which are longer and whiter; those on the lower Part of the Branches are oval, and join at their Base, surrounding the Stalks; but the upper Leaves are Spear-shaped and distinct; the Flowers are larger, and of a paler purple Colour. This flowers and ripens Seeds at the same Time with the first.

The 3d Sort differs from both the former, in having shorter and greener Leaves, which are joined at their Base, and are hairy. The Foot Stalks of the Flowers are much longer, and the Flowers smaller, but of a deeper purple. This flowers and seeds at the same Time with the two former, and the Shrubs grow as large as the first Sort.

The 4th Sort hath much larger, and rounder Leaves than either of the former, which are hairy, and smooth on their upper Side, but rough, and full of Veins on their under; the Branches are white and hairy, and the Flowers are very large, and of a light purple Colour. This flowers at the same Time.

The 5th Sort doth not rise so high as either of the former, but sends out Branches near the Root, which are hairy and erect; these are garnished with Spear-shaped Leaves, of a dark green Colour, and join at their Base, surrounding the Stalk. At each Joint comes out a very slender Branch, having three Pair of small Leaves of the same Shape with the other, and terminated by a single Flower, and the Ends of the Branches have three or four Flowers sitting close without Foot Stalks. The Flowers are of a deep purple, and like those of the first. This flowers at the same Time.

The 6th Sort rises five or six Feet, with a strong woody Stalk, sending out many hairy Branches, garnished with Spear-shaped Leaves, smooth on their upper Side, but veined on their under, having short Foot Stalks, which join at their Base, where they form a Sort of Sheath to the Branch. The Flowers come out at the End of the Branches, which are large, of a light purple Colour, and resembling those of the 4th Sort.

The 7th Sort hath erect Branches, which come out from the lower Part of the Stalk, and are woolly; these are garnished with oblong hoary Leaves, covered with a white Down, which are smooth above, but veined on their under Side, joining at their Base, where they surround the Stalk; the Flowers are produced at the End of the Branches, they are of a bright purple, and large. This flowers at the same Time with the others.

The 8th Sort hath a slender smooth Stalk, covered

with a brown Bark, which never rises more than three Feet high, sending out many horizontal weak Branches, which spread very wide, and are garnished with small oval Leaves, which are hairy, standing upon short Foot Stalks. The Flowers come out at the Wings of the Leaves, upon long naked Foot Stalks; these are white, and somewhat smaller than those of the other Sorts. This flowers in *June*, *July*, and *August*.

The 9th Sort grows naturally in the Islands of the *Archipelago*; this is the Plant which produces the *Labdanum*, hereafter mentioned, it rises three or four Feet high, with a woody Stalk, sending out many lateral Branches covered with a brown Bark, and garnished with oval, Spear-shaped, hairy Leaves, with waved and curled Borders; these in warm Seasons sweat a glutinous Liquid, which spreads on the Surface of the Leaves, and is very clammy and sweet-scented. The Flowers come out at the End of the Branches, on short hairy Foot Stalks; they are of a deep purple, and about the Size of a single Rose; these appear in *June* and *July*.

The 10th Sort rises with a shrubby Stalk about four Feet high, the Branches are very hairy, glutinous, and grow erect, and are garnished with long narrow Leaves ending in Points, which are hairy, and of a deep green on both Sides, having a deep longitudinal Furrow on their upper Side, made by the Mid-rib, which is prominent on the under Side, the Flowers stand upon long Foot Stalks at the End of the Branches, of a pale Sulphur Colour, having a bordered Empalement, which is cut into five acute Parts at the Top. This flowers in *June*, *July*, and *August*, and the Seeds ripen in Autumn.

The 11th Sort rises with a strong woody Stem, to the Height of five or six Feet, sending out many erect Branches, garnished with Spear-shaped Leaves ending in Points; these are thick, white on their under Side, of a dark green above, and very glutinous in warm Weather. The Flowers are produced at the End of the Branches, upon long naked Foot Stalks, which branch on their Sides into small Foot Stalks, each sustaining one large white Flower, having a hairy Empalement. This Sort flowers in *June* and *July*.

The 12th Sort rises with a smooth shrubby Stalk, 4 or 5 Feet high, sending out many slender ligneous Branches, covered with a smooth brown Bark; these are garnished with smooth oblong Heart-shaped Leaves, and have long Foot Stalks. The Flowers are produced at the End of the Branches, standing upon pretty long Foot Stalks; they are white, and appear in *June*, *July*, and *August*, but rarely produce Seeds in *England*.

The 13th Sort rises with a slender shrubby Stalk from 3 to 4 Feet high, sending out many Branches from the Bottom, which are hairy, and garnished with Spear-shaped Leaves of a very dark green, having three longitudinal Veins in each, and in warm Weather are covered with a glutinous sweet-scented Substance, which exudes from their Pores. The Flower Stalks which come out at the End of the Branches, are long, naked, and sustain many white Flowers, rising above each other, their Empalements are bordered, and end in sharp Points. This flowers at the same Time with the last.

The 14th Sort rises with a woody Stem to the Height of 5 or 6 Feet, sending out many Side Branches from the Bottom, the whole Length; these are smooth, covered

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vered with a reddish brown Bark, and garnished with narrow Spear-shaped Leaves, whitish on their under Side, of a dark green above, having three longitudinal Veins. The Flowers are produced at the End of the Branches, on short Foot Stalks, and are composed of 5 very large roundish white Petals, each having a large purple Spot at their Base. The whole Plant exudes a sweet glutinous Substance in warm Weather, which hath a strong balsamic Scent, so as to perfume the Air to a great Distance. This flowers in *June*, *July*, and *August*.

There is a Variety of this with white Flowers, having no purple Spots, but is in all other Respects the same.

The 15th Sort rises with a shrubby Stalk to the same Height as the last, sending out many Branches on every Side, garnished with Spear-shaped Leaves, of a thick Consistence, which are smooth on their upper Side, of a very dark green Colour, and white on their under Side; these are very clammy, especially in warm Weather; the Flowers are produced at the End of the Branches, on short Foot Stalks; they are very large, white, and have a broad, dark, purple Spot at the Base of each Petal; this differs from the former Sort in the Shape and Size of their Leaves; those of this Sort being much shorter and broader, and are very white on their under Side. The Side Branches are shorter, and the Leaves stand much closer on them; the Flowers are larger, and the whole Plant, is much more glutinous. It flowers most Part of Summer.

The 16th Sort hath a stiff, slender, woody Stalk, which sends out many Branches the whole Length, and rises to the Height of 6 or 7 Feet; the Leaves are large, Heart-shaped, thin, and of a light green Colour; these fit close to the Branches, and have many Nerves; the Flowers are produced at the End of the Branches, upon naked Foot Stalks, they are white, and fade to a pale Sulphur Colour when they fall off. This flowers in *June* and *July*, and is at present rare in the *English* Gardens.

The 17th Sort hath an upright shrubby Stalk, which rises 4 or 5 Feet high, sending out many Branches, from the Ground upward, so as to form a large Bush. The Branches are channelled, and hoary. The Leaves are oval, standing opposite; those on the lower Part of the Branches have Foot Stalks, but upward they coalesce at their Base, and surround the Stalk; these are very white. The Foot Stalks of the Flowers which rise at the End of the Branches, are a Foot in Length, naked, hairy, and put out two or four shorter Foot Stalks on the Side, each supporting three or four Flowers, and the Stalk is terminated by several Flowers, each standing on a short Foot Stalk. The Flowers are large, of a bright yellow, but of short Duration, their Empalements are hairy, and sharp pointed. This flowers in *June* and *July*, and at present is but in few *English* Gardens.

The 18th Sort hath been long in the *English* Gardens; this rises with a slender woody Stalk, 3 or 4 Feet high, sending out many slender Branches, garnished with narrow, Spear-shaped, hoary Leaves, which sit close to the Branches; from the Wings of the Leaves, come out slender Branches, which have two or three Pair of small Leaves, and are terminated by loose Bunches of Flowers, each standing on a slender Foot Stalk. The Flowers are of a dirty Sulphur Colour, and appear in *June* and *July*, but are never succeeded by Seeds here.

This Sort will not live abroad in Winter, so is always placed in a Green-house, where its hoary Leaves, which continue all the Year, make a Variety.

All the various Kinds of *Cistus* are very great Ornaments to a Garden; their Flowers are produced in great Plenty all over the Shrubs, which though but of short Duration, are succeeded by fresh ones almost every Day for above two Months successively; these Flowers are many of them about the Bigness of a middling Rose, but single, and of different Colours, and continue there throughout the Year.

These Plants are all of them, except the last, hardy enough to live in the open Air in *England*, unless in very severe Winters, which often destroy them, so that a Plant or two of each Sort may be kept in Pots, and sheltered in Winter, to preserve the Kinds; the rest may be intermixed with other Shrubs, where they will make a pretty Diversity; and in such places where they are sheltered by other Plants, they will endure the Cold much better than where they are scattered singly in the Borders. Many of these Plants will grow to the Height of five or six Feet, and will have large spreading Heads, provided they are permitted to grow uncut; but if they are ever trimmed, it should be only so much as to prevent their Heads from growing too large for their Stems; for whenever this happens, they are apt to fall on the Ground, and appear unsightly.

These Shrubs are propagated by Seeds, and Cuttings; but the latter Method is seldom practised, unless for those Sorts which do not produce Seeds in *England*; these are the 12th, 17th, and 18th Sorts, all the others generally produce Plenty of Seeds, especially those Plants which came from Seeds, for those which are propagated by Cuttings, are very subject to become barren, which is common to many other Plants.

The Seeds of these Plants may be sown in Spring on a common Border of light Earth, where the Plants will come up in 5 or 6 Weeks, and, if they are kept clear from Weeds, and thinned where too close, they will grow eight or ten Inches high the same Year; but as these Plants, when young, are liable to Injury from hard Frost, therefore they should be transplanted when about an Inch high, some into small Pots filled with light Earth, that they may be removed into shelter in Winter, and the others into a warm Border, at about six Inches Distance each Way; those which are potted must be set in a shady Situation till they have taken new Root; and those planted in the Border must be shaded every Day with Mats till they are rooted, after which the latter will require no other Care but to keep them clean from Weeds till Autumn, when they should have Hoops placed over them, they may be covered in frosty Weather; those in the Pots may be removed into an open Situation, so soon as they have taken new Root, where they may remain till the End of *October*, but during the Summer they must be frequently watered; then they should be placed under a hot Bed Frame to screen them from the Cold in Winter, but, at all Times, when the Weather is mild, they should be fully exposed to the open Air, and only covered in Frosts; with this Management the Plants will thrive much better than when they are more tenderly treated.

The above Method is what the Gardeners generally practise; but those who are desirous to have their Plants come

come forward, should sow the Seeds on a moderate hot Bed in the Spring, which will bring up the Plants very soon, but these must have Plenty of Air when they appear, otherwise they will draw up very weak; when the Plants are fit to remove, they should be each planted into a small Pot, and plunged into a very moderate hot Bed, observing to shade them till they have taken fresh Root, then they must have Plenty of Air admitted to them every Day in good Weather, to prevent their drawing up weak; and by Degrees they must be hardened, so as to be removed into the open Air the Beginning of June, and then they may be treated in the same Manner as is before directed for the other seedling Plants; by bringing the Plants forward in the Spring in this Method, they will grow to the Height of a Foot, or more, the first Summer, and have many lateral Branches, so will be strong enough to plant abroad the following Spring, and most of them will flower the succeeding Summer, whereas those which are sown in the full Ground, rarely flower till the Year after, nor will they be so strong, or capable to resist the Cold of the second Winter, as these which have been brought forward.

The Spring following, these Plants may be turned out of the Pots, with all the Earth preserved to their Roots, and planted in the Places where they are to remain (for they are bad Plants to remove when grown old), observing to give them now and then a little Water, until they have taken fresh Root; after which they will require no farther Care than to train them upright in the Manner you would have them grow; but those Plants which were at first planted into a Border in the open Ground, should be arched over, and covered with Mats in frosty Weather, during the first Winter; but may be transplanted abroad the succeeding Spring. In removing these Plants, you should be careful to preserve as much Earth about the Roots as you can; and if the Season should prove hot and dry, water and shade them, until they have taken fresh Root, after which they will require no other Culture than was before directed.

These Plants may also be propagated by Cuttings planted in May or June, upon a Bed of light Earth, keeping them shaded with Mats, and frequently refreshed with Water, until they have taken Root, which will be in about two Months, when you may transplant them into Pots filled with good fresh light Earth, which should be set in a shady Place until they have taken Root, and then may be exposed to the open Sun until October, when you should remove them into Shelter the first Winter; but the succeeding Spring you may plant them abroad, as directed for the Seedling Plants.

The 14th and 15th Sorts are by much the most beautiful of all these *Cistus*'s; the Flowers, which are as big as a large Rose, are of a fine white, with a deep purple Spot on the Bottom of each Leaf. These Plants abound with a sweet glutinous Liquor, which exudes through the Pores of the Leaves in so plentiful a Manner, in hot Weather, that the Surfaces of the Leaves are covered therewith; from this Plant *Clusius* thinks might be gathered great Quantities of the Labdanum which is used in Medicine, in the Woods in Spain, where he saw vast Quantities of this Shrub growing.

But it is from the 9th Sort, which *Monf. Tournefort* says, the *Greeks*, in the *Archipelago*, gather this sweet

Gum; in the doing of which (*Bellonius* says) they make use of an Instrument like a Rake without Teeth, which they call *Ergassiri*; to this are tied many thongs of raw and untanned Leather, which they rub gently on the Bushes that produce the Labdanum, that so that liquid Moisture may stick upon the Thongs; after which they scrape it off with Knives; this is done in the hottest Time of the Day, for which Reason the Labour of gathering this Labdanum is excessive, and almost intolerable, since they are obliged to remain on the Mountains for whole Days together, in the Heat of Summer, or the Dog Days, nor is there any Person almost that will undertake this Labour, except the *Greek Monks*.

Monf. Tournefort also relates the same in his Travels, where he says, that the Shrubs which produce the Labdanum grow upon dry sandy Hillocks; and that he observed several Country Fellows in their Shirts and Drawers, that were brushing the Shrubs with their Whips; the Straps whereof, by being drawn over the Leaves of the Plant, licked up a Sort of odoriferous Balsam sticking upon the Leaves, which he supposes to be Part of the nutritious Juice of the Plant, which exudes through the Pores of the Leaves, where it remains like a fattish Dew, in shining Drops as clear as Turpentine.

When the Whips are sufficiently laden with this Grease, they take a Knife, and scrape it clean off the Straps, and make it up into a Mass of Cakes of different Sizes; this is what comes to us under the Name of Ladanum, or Labdanum. A Man that is diligent, will gather three Pounds two Ounces *per Day*, or more, which they sell for a Crown on the Spot; this Work is rather unpleasant than laborious, because it must be done in the hottest Time of the Day, and in the greatest Calm; and yet the purest Ladanum is not free from Filth, because the Winds of the preceding Days have blown Dust upon these Shrubs, which, by the glewy Substance upon the Surfaces of the Leaves, is thereby detained, and mixed therewith. But to add Weight to this Drug, they knead it up with a very fine blackish Sand, which is found in those Parts, as if Nature herself was minded to teach them how to adulterate this Commodity. It is no easy Thing to discover this Cheat, when the Sand has been well blended with the Ladanum; in order to which you must chew it for some Time, to find whether it crackles between the Teeth, and if it doth, you must first dissolve it, and then strain it, in order to purify away what has been added to it.

CITHAREXYLON. *Lin. Gen. Plant.* 678. Fiddle Wood.

The Characters are,

The Empalement of the Flower is Bell-shaped of one Leaf, indented in five Parts. The Flower is of one Leaf, funnel-shaped, and divided at the Top into five equal Parts, which spread open. It hath four Stamina which adhere to the Tube, two of them being longer than the other, terminated by oblong Summits with two Lobes. In the Center is situated the roundish Germen, supporting a slender Style, crowned by an obtuse, double-beaded Stigma. The Germen becomes a Capsule with two Cells, each having a single Seed.

The Species are,

1. CITHAREXYLON foliis ovato-lanceolatis venosis, dentatis ternatis, ramis angulatis, floribus racemosis, sparsis. Fiddle Wood with oval Spear-shaped Leaves, which are veined,

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veined, indented, and placed by Threes, angular Branches, and Flowers growing in loose Bunches. This is the common Fiddle Wood of *America*.

2. *CITHAREXYLON foliis oblongo-ovatis, integris, oppositis, ramis angulatis, floribus spicatis*. Fiddle Wood with oblong, oval, entire Leaves growing opposite, angular Branches, and Flowers growing in Spikes. This is the *Berberis fructu arbor maxima baccifera, racemosa, foliis integris obtusis, flore albo pentapetalo odoratissimo, fructu nigro monopyreno*. Fiddle, or Fidelle Wood.

The 1st Sort grows common in most of the Islands in the *West-Indies*, where it rises to a great Height, and becomes a very large Timber Tree, the Wood of which is greatly esteemed for Buildings, being very durable.

This rises with an upright Trunk to the Height of 50 or 60 Feet, sending out Branches on every Side, which have several Angles, or Ribs, running longitudinally; these are garnished by three, oval, Spear-shaped Leaves at every Joint, standing in a Triangle, upon short Foot Stalks. The Leaves are about 3 Inches long, and one and a Half broad, of a lively green Colour, pretty much notched on their Edges, having several deep Veins running from the Mid-rib to the Edges, which are of a pale, or whitish Colour on their upper Side, and very prominent on their under. The Flowers come out from the Sides, and also at the End of the Branches, in loose Bunches, which are succeeded by small pulpy Berries, inclosing two Seeds in each.

The 2d Sort is a Native of the same Islands with the 1st. This is also a very large Tree, whose Timber is greatly valued in *America*, for Buildings, being very durable, and from thence I have been informed the *French* gave it the Title of Fidelle Wood, which the *English* have rendered Fiddle Wood, and some have supposed that the Wood was used for making those musical Instruments, which is a great Mistake.

This Tree rises with a strong upright Trunk, to the Height of 60 Feet, or more, sending out many angular Branches, standing opposite, which are covered with a loose whitish Bark, and are garnished with oval oblong Leaves, standing opposite on short Foot Stalks; these are of a lucid green, and are rounded at their Ends. The Flowers come out in long loose Spikes, toward the End of the Branches, which are white, and smell very sweet; these are followed by small roundish, pulpy Berries, each inclosing a single Seed.

The 1st Sort hath been long preserved in some of the curious Gardens in *England*, for the Sake of Variety. The Leaves continuing through the Year, and being of a fine green Colour, make a pretty Variety in the Stove during the Winter Season; this may be propagated either by Seeds, or Cuttings, the latter is the usual Method in *England*, where the Seeds, are not produced, but when Seeds can be obtained from Abroad, the Plants which rise from them are much better than those raised from Cuttings.

The Seeds of this Sort should be sown in small Pots early in the Spring, and plunged into a fresh hot Bed of Tanners Bark, and treated as other exotick Seeds, which are brought from hot Countries. If the Seeds are fresh, the Plants will appear in five or six Weeks; and in about one Month more, will be fit to transplant; when this is done, the Plants should be carefully separated, so as not

to tear, or break off the Roots, and each planted in a small Pot filled with light fresh Earth, and plunged into the hot Bed again, observing to shade them till they have taken fresh Root, after which they should have a large Share of Air admitted to them in warm Weather, and must be frequently watered; in Autumn the Plants should be removed into the Bark Stove, where it will be proper to keep them the first Winter, till they have obtained Strength, then they may be afterward kept in a dry Stove in Winter, and in the Middle of Summer they may be exposed in the open Air for two Months, in a warm Situation, with which Management the Plants will make better Progress than when they are more tenderly treated.

If the Cuttings of this Plant are planted in small Pots during the Summer Months, and plunged into a moderate hot Bed, they will take Root, and may afterward be treated in the same Manner as the seedling Plants.

The Seeds of the 2d Sort were sent me by *William Williams, Esq;* from *Jamaica*, which have succeeded in the Physick Garden, at *Chelsea*, but the Plants are, as yet, young, so that I can give no other Account of them, than what is beforementioned; however they seem to be full as hardy as those of the first Sort, and make full as great Progress. The Leaves of this Sort continue all the Year, and having a glossy green Colour, make a pretty Appearance in the Winter Season.

CITRUS. *Lin. Gen. Plant.* 807. *Citream. Tourn. Inst. R. H.* The Citron Tree, in *French*, *Citronier*.

The Characters are,

The Empalement of the Flower is of one Leaf, indented in five Parts. The Flower hath five, oblong, thick Petals, which spread open, and are a little concave; it hath ten Stamina, which are not equal, and join in three Bodies at their Base, terminated by oblong Summits. The oval Germen in the Center supports a cylindrical Style, crowned by a globular Stigma; the Germen afterward becomes an oblong Fruit, with a thick fleshy Skin filled with a succulent Pulp, having many Cells, each containing two oval hard Seeds.

The Species are,

1. *CITRUS fructu oblongo, majori, mucronato, cortice crasso rugoso*. Citron with a larger, oblong, pointed Fruit, having a thick rough Rind. This is the *Malum Citreum dulci medullâ. Fer. Hesp.* Sweet Citron.

2. *CITRUS fructu oblongo, cortice tuberoso rugoso*. Citron with an oblong Fruit, and a rough knobbed Rind. *Malum Citreum vulgare. Fer. Hesp.* Common Citron.

There are several other Varieties of this Fruit, with which the *English* Gardens have been supplied from *Genoa*, the great Nursery of *Europe* for this Sort, as also Orange and Lemon Trees; and the Gardeners who cultivate them there, are as fond of introducing a new Variety to their Collection, as the Nursery Men in *England* are of a new Pear, Apple, Peach, &c. so that the Varieties being annually increased, as are many of our Fruits from Seeds, there is like to be no End of the Variety of these, nor of the Orange and Lemon Trees.

The Fruit of the Citron is seldom eaten raw, as the Orange, but are generally preserved, and made into Sweetmeats, which are by some Persons greatly esteemed; and as these are kept till Winter and Spring, when there is a Scarcity of Fruit for furnishing the Desert,

they are the more valuable; but unless the Seasons are warm, and the Trees well managed, the Fruit rarely ripens in *England*. Some of the fairest Fruit which I have seen growing in *England*, were in the Gardens of his Grace the Duke of *Argyle*, at *Whitton*, where the Trees are trained against a South Wall, through which there are Flues contrived for warming the Air in Winter, and Glass Covers to put over them when the Weather begins to be cold. In this Place the Fruit were as large, and perfectly ripe, as they are in *Italy* or *Spain*.

The several Sorts of Citrons are cultivated as the Orange Tree, to which I shall refer the Reader, to avoid Repetition; but shall only remark, that these are somewhat tenderer than the Orange, and should have a warmer Situation in Winter, otherwise they are very subject to cast their Fruit. They should also continue a little longer in the House in Spring, and be carried in again sooner in Autumn; as also have a warmer and better defended Situation in Summer, though not too much exposed to the Sun in the Heat of the Day.

As their Leaves are larger, and their Shoots stronger, than those of the Orange, they require a little more Water in Summer; but in Winter they should have very little Water at each Time, which must be oftener repeated. The Soil ought to be much the same as for the Orange Tree, but not quite so strong.

The common Citron is much the best Stock to bud any of the Orange or Lemon Kinds upon, it being the straightest and freest growing Tree; the Rind is smoother, and the Wood less knotty, than either the Orange or Lemon, and will take either Sort full as well as its own Kind, which is what none of the other Sorts will do: And these Stocks, if rightly managed, will be very strong the second Year after sowing, capable to receive any Buds, and will have Strength to force them out vigorously; whereas it often happens, when these Buds are inoculated into weak Stocks, they frequently die, or remain till the second Year before they put out; and those that shoot the next Spring after budding, are oftentimes so weak as hardly to be fit to remain, being incapable to make a straight handsome Stem, which is the great Beauty of these Trees.

CITRUL. See Pepo.

CLARY. See Horminum, or Sclarea.

CLAYTONIA. *Gron. Flor. Virg. Lin. Gen. Pl.* 253.

The Characters are,

The Flower hath a two leaved oval Empalement, with a transverse Base: It hath five oval Petals which are indented at the Top, and five recurved Stamina, which are shorter than the Petals, terminated by oblong Summits; in the Center is situated an oval Germen, supporting a single Style, crowned by a trifid Stigma: The Germen afterward becomes a roundish Capsule having three Cells, opening with three elastic Valves, and filled with round Seeds.

We have but one Species of this Genus in *England*, viz.

CLAYTONIA foliis linearibus. *Lin. Sp. Plant. Claytonia* with narrow Leaves. This is the *Ornithogalo affinis Virginiana*, flore purpureo petala petaloide. *Phuk.*

This Plant grows naturally in *Virginia*, from whence it was sent by Mr. Clayton to *England*, and received its Title from him.

It hath a small tuberous Root, which sends out low

slender Stalks in the Spring, about 3 Inches high, which have each 2 or 3 succulent narrow Leaves about two Inches long, of a deep green Colour; at the Top of the Stalk are 4 or 5 Flowers produced, standing in a loose Bunch; these are composed of 5 white Petals which spread open, and are spotted with red on their Inside; after these fall away, the Germen becomes a roundish Capsule divided into three Cells, which are filled with roundish Seeds. The Flowers appear in *April*, and the Seeds ripen in *June*, soon after which the Plant decays to the Root.

It is propagated by Seeds, and also from Offsets sent out from the Roots: The Seeds should be sown upon a Border of light Earth, soon after they are ripe; for if they are kept out of the Ground till Spring, the Plants will not come up till the next Year; whereas those which are sown early in the Autumn, will grow the following Spring, so that a whole Year is gained. When the Plants come up, they will require no other Care but to keep them clean from Weeds; and in the Autumn, if some old Tanners Bark is spread over the Surface of the Ground, it will secure the Roots from being injured by Frost; which, if it should prove very severe, might injure the young Plants, but after the first Winter they will not require Protection.

The best Time to transplant the Roots is about *Michaelmas*, when they are inactive; but as they are small, if great Care is not taken in opening the Ground, the Roots may be buried and lost; for they are of a dark Colour, and not easily distinguished from the Ground.

CLAVICLE a Clasper or Tendril.

CLEMATIS. *Lin. Gen. Plant.* 616. *Clematitis. C. B. P.* 300. *Virgin's Bower.*

The Characters are,

The Flowers have no Empalements; they have each four loose oblong Petals, with a great Number of Stamina, which are shorter than the Petals, and the Summits adhere to their Side. They have many Germina, which are roundish and compressed; the Awl-shaped Style, which is longer than the Stamina, is crowned by a single Stigma. The Germina afterward become so many roundish compressed Seeds, with the Style sitting on their Top, and are collected into a Head, the Styles of the several Species being of various Forms.

The Species are,

1. CLEMATIS foliis pinnatis, foliolis ovato-lanceolatis, integerrimis, caule erecto. *Hort. Cliff.* 225. *Clematis* with winged Leaves, whose Lobes are oval, Spear-shaped, and entire, and an upright Stalk. This is the *Clematitis five flammula surrecta alba*. *J. B.* 2. 127. Upright white Climber.

2. CLEMATIS foliis simplicibus, ovato-lanceolatis. *Hort. Cliff.* 225. *Clematis* with single Leaves, which are oval and Spear-shaped. This is the *Clematitis caerulea erecta*. *C. B. P.* 300. Upright blue Climber.

3. CLEMATIS Hispanica surrecta altera & humilior flore albicante. *H. R. Par.* Another lower, Spanish, upright Climber, with a whitish Flower.

4. CLEMATIS latifolia integra. *J. B.* Climber with broad entire Leaves, commonly called *Viorna*, or *Traveller's Joy*.

5. CLEMATIS foliis ternatis, foliolis cordatis, acutis, dentatis, scandentibus. *Clematis* with trifoliate, Heart-shaped, pointed Leaves, which are indented, and climbing

ing. *Clematis Canadensis latifolia* & *triphylla*. Sar. Broad leaved Canada Climber, having three Leaves.

6. *CLEMATIS foliis inferioribus, pinnatis, laciniatis, summis simplicibus, integerrimis, lanceolatis*. Hort. Cliff. 225. *Clematis* whose lower Leaves are winged and jagged, and the upper ones single, Spear-shaped, and entire. This is the *Clematis five flammula repens*. C. B. P. 300. Creeping Climber.

7. *CLEMATIS cirrbis scandens*. Hort. Cliff. 226. *Clematis* with climbing Tendrils. This is the *Clematis peregrina, foliis pyri incis.* C. B. P. 300. Foreign Climber with cut Pear Leaves.

8. *CLEMATIS foliis compositis decompositisque, foliolis ovatis, integerrimis*. Hort. Cliff. 225. *Clematis* with compound and decomposed Leaves, whose small Leaves are oval and entire. *Clematis caerulea vel purpurea repens*. C. B. P. Single blue Virgin's Bower.

9. *CLEMATIS foliis ternatis, ternatisque foliolis, ovatis, acutè ferratis, scandentibus*. *Clematis* with trifoliate Leaves, which have three oval Lobes, sharply sawed, and climbing. This is the *Clematis Alpina geranii folio*. C. B. P. Alpine Climber with a Crane's Bill Leaf.

10. *CLEMATIS foliis compositis decompositisque, foliolis quibusdam trifidis*. Flor. Virg. 62. *Clematis* with compound and decomposed Leaves, some of whose Lobes are trifid. This is the *Clematis purpurea repens, petalis florum coriaceis*. Raii Hist. 1928. Creeping, purple Climber, with coriaceous Petals to the Flower.

11. *CLEMATIS foliis compositis, foliolis incis, angulatis, lobatis, cuneiformibus*. Lin. Sp. Plant. 543. *Clematis* with compound Leaves, whose small Leaves are angularly cut, and Wedge-shaped Lobes. This is the *Clematis Orientalis folio apii, flore ex viridi flavescente, postèrius reflexo*. Tourn. Cor. 20. Eastern Climber with a Smallage Leaf, and a reflexed greenish yellow Flower.

12. *CLEMATIS foliis compositis & decompositis, foliolis ternatis, ferratis*. Gmel. Climber with compound and decomposed Leaves, whose small Leaves are sawed and trifoliate.

13. *CLEMATIS foliis ternatis, foliolis ovatis, trinerviis, integerrimis, floribus racemosis, alaribus, oppositis*. Three leaved Climber, with oval, entire Leaves, having three Veins, and Flowers growing in Bunches from the Sides of the Stalk, which are opposite. *Clematis foliis ternis*. Sloan. Cat. 84. Three leaved Climber.

14. *CLEMATIS Americana triphylla foliis non dentatis*. Houss. Mss. Three leaved American Climber with Leaves not indented.

15. *CLEMATIS foliis ternatis, foliolis acutè dentatis, tomentosis, quinque nerviis*. Climber with three Leaves, whose small Leaves are sharply indented, woolly, and have five Nerves.

16. *CLEMATIS foliis simplicibus, ternatisque: foliolis integris trilobis*. Lin. Sp. Plant. 543. Climber with single and trifoliate Leaves, whose small Leaves are either entire, or have three Lobes. This is the *Clematis flore crispis*. Hort. Elsb. 86. Climber with a curled Flower.

The 1st Sort grows naturally in the South of France, Italy, Austria, and several Parts of Germany, but hath been long cultivated in the English Gardens for Ornament. This hath a perennial Root and an annual Stalk, which decays in Autumn, and new arise in Spring. The Stalks are upright, about 3 Feet high, garnished with

winged Leaves standing opposite; these are composed of 3 or 4 Pair of Lobes, terminated by an odd one, which are oval, Spear-shaped, and entire; the Flowers are produced in large loose Panicles, at the Top of the Stalks; these are composed of 4 white Petals, which spread open; and the Middle is occupied by a great Number of Stamina, surrounding 5 or 6 Germen, which become so many compressed Seeds, each having a long Tail or Beard sitting on the Top. It flowers in June, the Seeds ripen in September.

The 2d Sort grows naturally in Hungary and Tartary, but hath been long an Inhabitant of the English Gardens. The Root of this is perennial, sending up many slender upright Stalks, from 3 to 4 Feet high, garnished with single Leaves at each Joint, which stand opposite on very short Foot Stalks; they are near 4 Inches long, and an Inch and Half broad in the Middle, of a bright green, smooth, and are entire, ending in a Point: The Flowers come out from the upper Part of the Stalks, standing upon very long naked Foot Stalks, each supporting a single blue Flower, composed of 4 narrow thick Petals which spread open, and many hairy Stamina surrounding the Germen in the Center. After the Flowers are past, the Germen become so many compressed Seeds, each having a Tail or Beard. It flowers and seeds at the same Time with the first.

The 3d Sort is very like the first, from which it differs in having but 2 or 3 Pair of Lobes in each Leaf, which are narrower and stand farther asunder: The Stalks are shorter, and the Flowers larger.

The 4th Sort grows naturally in the Hedges, in England. This hath a tough climbing Stalk, sending out Claspers, by which it fastens to the neighbouring Bushes and Trees, and sometimes arises more than 20 Feet high, sending out many Side Branches, so as often to cover all the Trees and Bushes of the Hedge. This puts out many Bunches of white Flowers in June, which are succeeded by several flat Seeds joined in a Head, each having a long twisted Tail sitting on the Top, which is covered with long white Hairs; and in Autumn when the Seeds are near ripe, they appear like Beards, from whence the Country People call it Old Man's Beard. The Branches of this being very tough and flexible, are used for tying up Faggots, from whence in some Counties, it is called Bindwith.

There are 2 Varieties of this, one with indented Leaves, which is most common, and the other entire Leaves; but as these are supposed to arise accidentally from Seeds, they are not distinguished by later Botanists.

The 5th Sort grows naturally all over North America, from whence the Seeds have been brought to Europe. This is in its first Appearance very like the last Sort, but the Leaves are broader, and grow by Threes on the same foot Stalk, whereas those of the former have 5 or 7 Lobes in each Leaf: The Flowers appear at the same Time with the former, but the Seeds do not ripen in England, unless the Season is very warm. There is little Beauty in this Sort.

The 6th Sort hath a climbing Stalk, like the 4th; the lower Leaves of this are winged, and deeply cut on their Edges, but the upper Leaves are single, Spear-shaped, and entire; the Flowers of this Sort are white,

and appear in *June* and *July*. This grows naturally in the South of *France*, and in *Italy*.

The 7th Sort grows naturally in *Spain* and *Portugal*. This hath a climbing Stalk, which will rise to the Height of 8 or 10 Feet, sending out Branches from every Joint, whereby it becomes a very thick bushy Plant; the Leaves are sometimes single, at others double, and frequently trifoliate, being indented on their Edges. These keep their Verdure all the Year; opposite to the Leaves come out Claspers, which fasten themselves to the neighbouring Shrubs, by which the Branches are supported, otherwise they would fall to the Ground. The Flowers are produced from the Side of the Branches; these are large, of an herbaceous Colour, and appear always about the End of *December*, or Beginning of *January*, which being a Season when few Persons visit Gardens, these Flowers have escaped their Notice, so that many have supposed this Sort doth not produce Flowers in *England*; and the Flowers being nearly the same Colour of the Leaves, those who have been more constant Visitors of Gardens, have passed by this Plant, without noticing the Flowers; but for many Years together, it hath produced Plenty of Flowers in the Garden at *Chelsea*, and always at the same Season.

The 8th Sort is cultivated in the Nursery Gardens for Sale, and is known by the Title of *Virgin's Bower*. There are four Varieties of it preserved in the Gardens of the Curious, and have been by some treated as so many distinct Species; but as their only Differences consist in the Colour of their Flowers, or the Multiplicity of their Petals, they are now only esteemed as seminal Variations; but as they are distinguished by the Nursery Gardeners, so I shall mention them.

1. Single blue *Virgin's Bower*.
2. Single purple *Virgin's Bower*.
3. Single red *Virgin's Bower*.
4. Double purple *Virgin's Bower*.

These have no Difference in their Stalks or Leaves, so that the same Description will fit them all, excepting the Colours or Multiplicity of Petals in their Flowers.

The Stalks of these Plants are very slender and weak, having many Joints from whence come out Side Branches, which are again divided into smaller: If these are supported, they will rise to the Height of 8 or 10 Feet, and are garnished with compound winged Leaves placed opposite at each Joint. These branch out into many Divisions, each of which hath a slender Foot Stalk, with 3 small Leaves which are oval and entire; from the same Joint, generally four Foot Stalks arise, two on each Side; the two lower have three of these Divisions, so that they are each composed of nine small Leaves; but the two upper have only two opposite Leaves on each, and between these arise three slender Foot Stalks, each supporting one Flower. The Flowers have each four Petals, which are narrow at their Base, but are broad at the Top and rounded: In one they are of a dark worn-out purple, in another blue, and the third of a bright purple or red Colour. The double Sort, which is common in the *English* Gardens, is of the worn-out purple Colour: But the foreign Catalogues mention double Flowers of both the other Colours. The double Flowers have no Stamina or Ger-

men; but in lieu of them, there is a Multiplicity of Petals, which are narrow, and turn inward at the Top.

These Plants grow naturally in the Woods, in *Spain* and *Portugal*, but have been long cultivated in the *English* Gardens for Ornament. They flower in *June* and *July*, but seldom ripen Seeds in *England*.

The 9th Sort grows naturally on the *Alps*, and other Mountains in *Italy*. I received it from Mount *Baldus*, where it is in Plenty. This hath a slender climbing Stalk, which rises 3 or 4 Feet high, supporting itself by fastening to the neighbouring Plants or Shrubs. The Leaves are composed of nine Lobes or small Leaves, three standing upon each Foot Stalk, so that it is what the former Writers stile a nine leaved Plant. The Flowers come out at the Joints of the Stalk, as the common Travellers Joy, which are white, so make no great Appearance. This Sort flowers in *May*.

The 10th Sort grow naturally in *Virginia* and *Carolina*, from whence I received the Seeds; this hath many slender Stalks; garnished with compound winged Leaves at each Joint; these are generally composed of nine Leaves, standing by Threes, like those of the 8th Sort, but the small Leaves of this are nearly of a Heart-shape. The Flowers stand upon short Foot Stalks, which come out from the Wings of the Leaves, one on each Side the Stalk. The Flowers are composed of 4 thick Petals, which are purple on their Outside, and blue within. They appear in *July*, and if the Autumn proves warm, the Seeds will ripen in *September*.

The 11th Sort was discovered by Dr. *Tournefort* in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and perfected Seeds, so that most of the Gardens in *Europe* have been furnished with Seeds from thence; this hath weak climbing Stalks, which fasten themselves by their Claspers, to any Plants, which stand near them, and thereby rise to the Height of 7 or 8 Feet; these are garnished with compound winged Leaves, consisting of nine small Leaves (or Lobes) which are angular, and sharp-pointed. The Flowers come out from the Wings of the Leaves, which are of a yellowish green, and the Petals are reflexed backward; these come out in *April* and *May*, and in warm Seasons the Seeds will ripen very well, if the Plants have a good Situation.

The 12th Sort grows naturally in *Tartary*, from whence the Seeds were sent to the Imperial Garden at *Petersburgh*, where it succeeded and hath produced Seeds, Part of which were sent me in the Year 1753: These grew, and the Plants have flowered the two last years in the *Chelsea* Garden. This Plant hath weak climbing Stalks which require Support, these grow near 4 Feet high; the Joints are far asunder, at each of these come two compound winged Leaves, whose small Leaves are placed by Threes; these are deeply sawed on their Edges and terminate in sharp Points. The Flowers come out from the Wings of the Leaves single, standing upon long naked Foot Stalks, and are composed of 4 narrow Spear-shaped Petals, which spread open in form of a Cross; they are of a yellowish white Colour. In the Center is several Germen, surrounded by a great Number of Stamina with flat compressed Summits, of the same Colour with the Petals of the Flower; after these

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these are past, the Germen become so many compressed Seeds, each having a bearded Tail. It flowers in *May*, and the Seeds ripen in *August*.

The 13th Sort was sent me from *Jamaica*. This hath slender climbing Stalks which fasten themselves to the Trees and Shrubs which stand near them, and thereby rise to the Height of 10 or 12 Feet: These are garnished by trifoliate Leaves, coming out on each Side the Stalk opposite, the Lobes are large, oval, and entire, having three longitudinal Veins. The Foot Stalks of the Flowers arise at the same Joints, close to those of the Leaves, one on each Side opposite: These are long, naked, and grow horizontally, extending beyond the Leaves before they divide or branch out; then there comes out 3 or 4 Pair of small Foot Stalks from the large one, each of which divides again into three smaller, each supporting a single Flower: The lower Pair of these are extended 4 or 5 Inches, the other gradually diminish to the Top, so that they form a pyramidal Thyrs of Flowers: These are white, and are composed of 4 narrow Petals which are reflexed back, but the Stamina all stand erect.

The 14th Sort was sent me from *Campeachy*. This hath strong climbing Stalks, which fasten themselves by their Claspers to the neighbouring Trees, whereby they are supported, and rise to the Height of 20 Feet or more: These are garnished at each Joint by trifoliate Leaves, which are Heart-shaped, pointed, and entire. The Flowers come out on long, naked, branching Foot Stalks, which rise from the Wings of the Leaves. The Flowers are white, and collected into roundish Bunches: These are succeeded by Seeds shaped like those of the common Sort, but have long curling Beards to each, which are finely feathered.

The 15th Sort was sent me from *La Vera Cruz* by the late Dr. *Houssoun* in 1730, where he found it growing plentifully in the Sands near the Old Town. This hath strong climbing Stalks, which have Claspers at each Joint, which fasten themselves to the Trees near them, whereby they climb to a great Height. These Stalks are garnished with trifoliate Leaves placed by Pairs opposite at each Joint. The Foot Stalks of these are alternately long; for on the same Joint, that on one Side is longer than the opposite, and so they continue alternate the whole Length of the Stalk. The small Leaves or Lobes end in sharp Points, and are sharply indented on their Edges: They have five longitudinal Veins, and are covered with a yellowish soft Down. The Flowers come out from the Wings of the Leaves, standing on short Foot Stalks, and are closely connected together: They are white, the Petals reflexed, and the Stamina stand erect, as in the former Sort.

The 16th Sort grows naturally in *Carolina*, from whence I received the Seeds in 1726. This hath weak Stalks which rise near 4 Feet high, and by their Claspers fasten themselves to the neighbouring Plants, whereby they are supported. The Leaves come out opposite at the Joints: These are sometimes single, at others trifoliate, and some of the Leaves are divided into three Lobes. The Flowers come out singly from the Side of the Branches upon short Foot Stalks, which have one or two Pair of Leaves below the Flower, which are oblong, and sharp pointed. The Flowers have four

thick Petals, like those of the 10th Sort; these are of a purple Colour, and their inner Surface is curled, and hath many longitudinal Furrows. This Sort flowers in *July*, and the Seeds ripen in *September*.

The 3 Sorts first enumerated, have perennial Roots, which multiply fast, but their Stalks die down every Autumn, and new ones arise in Spring, in which they differ from all the other Species, therefore require different Management, and are propagated in a different Manner, as follows.

These Plants are propagated either by Seeds, or parting their Roots; but the former being tedious (the Plants seldom rising until the 2d Year after sowing, and are often two Years more before they flower), the latter is generally practised. The best Season for parting the Roots is in *October* or *February*; just before their Branches decay, or before they rise again in Spring.

They will grow almost in any Soil or Situation; but if the Soil is very dry, they should always be new planted in Autumn, otherwise their Flowers will not be so strong; but if the Soil be wet, it is better to defer it until Spring. The Roots may be cut through their Crowns with a sharp Knife, observing to preserve to every Offset some good Buds or Eyes; and then it matters not how small you divide them; for their Roots increase very fast; but if you part them very small, you should let them remain 2 or 3 Years before they are again removed, that the 2d Year their Flowers may be strong, and the Roots multiplied in Eyes, which in one Year cannot be obtained.

These Plants are extreme hardy, enduring the Cold of our severest Winters in the open Air, and are very proper Ornaments for large Gardens, planted in large Borders, or intermixed with other hardy Flower Roots in Quarters of flowering Shrubs; where, being placed promiscuously in little open Places, they fill up those small Vacancies, and are agreeable enough. They begin to flower about the Beginning of *June*, and often continue to produce fresh Flowers until *September*; which renders them valuable, especially since they require very little Care in their Culture; for their Roots may be suffered to remain several Years undisturbed, if we do not want to part them, which will not in the least prejudice them.

The 4th Sort is found wild in *England* on the Side of Banks, under Hedges, and extends its trailing Branches over the Trees and Shrubs that are near it. It is titled by *Lobel* and *Gerard*, *Viorna*; and by *Dodonæus*, *Vitis alba*: In *English* it is most commonly called Travellers Joy. This Sort is never cultivated in Gardens, being too rambling, and having but little Beauty.

The 5th and 6th Sorts have no more Beauty than the 4th, so are seldom preserved in Gardens, unless for Variety. They are as hardy, and may be propagated by Seeds or laying down their Branches.

The 7th Sort retains its Leaves all the Year, which renders it valuable. This was formerly preserved in Green-houses in Winter, supposing it too tender to live in the open Air; but now it is planted in the full Ground, where the Plants thrive much better than in Pots, and produce Plenty of Flowers, which they never did when they were more tenderly treated: Nor have I found that the Plants have suffered from severe Frosts; for those
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which have been growing in the open Air of *Chelfea*, more than 20 Years, have resisted the greatest Cold without covering.

This Sort doth not produce Seeds in *England*, so it is propagated by Layers, and Cuttings. If they are propagated by Layers, it must be done in the Beginning of *October*, when the Shoots of the same Year only, should be chosen for this Purpose, for the older Branches do not put out Roots in less than two Years, whereas the tender Shoots will make good Roots in one Year: These must be pegged down into the Ground as is usually practised for other Layers, to prevent their rising. If the Shoots have two Inches of Earth over them, it will be better than a greater Depth; but then, a little old Tanners Bark should be spread over the Surface of the Ground, to keep out the Frost; for as the Plants generally begin flowering about *Christmas*, so at the same time they are putting out Roots, which being but just formed, may be injured by severe Frosts: These Layers will have strong Roots by the following Autumn, when they may be taken from the old Plant, and transplanted where they are designed to remain.

When they are propagated by Cuttings, they should be planted in *March*, in Pots filled with good Kitchen Garden Earth, and plunged into a moderate hot Bed, observing to shade them from the Sun in the Day-time, and gently water them 2 or 3 times a Week, and in less than two Months they will have taken Root, when they should be gradually inured to the open Air: The following Summer they may be placed in any Part of the Garden till *Michaelmas*; and then they should be turned out of the Pots and planted in the full Ground, either where they are designed to remain, or into a Nursery Bed, to grow a Year longer to get Strength, before they are placed out for good.

All the Varieties of *Virgin's Bower*, are propagated by laying down their Branches; for although the single Flowers do sometimes produce Seeds in *England*, yet as these Seeds, when sown, remain a whole Year in the Ground before they vegetate, the other being the more expeditious Method of increasing these Plants, is generally practised: But in order to succeed, these Layers should be put down at a different Season, from the former Sort; for when they are layed in Autumn, their Shoots are become tough, so do rarely put out Roots under two Years, and after lying so long in the Ground, not one in three of them will have made good Roots; so that many have supposed the Plants were difficult to propagate, but since they have altered their Season of doing it, they have found the Layers have succeeded as well as those of other Plants.

The best Time for laying down the Branches is in *July*, soon after they have made their first Shoots, for the young Branches of the same Year, freely take Root; but as these are very tender, there should be great Care taken not to break them in the Operation: Therefore those Branches from which these Shoots were produced, should be brought down to the Ground, and fastened to prevent their rising; then the young Shoots should be layed into the Earth, with their Tops raised upright, 3 or 4 Inches above Ground, and after the Layers placed down, if the Surface of the Ground is covered with Moss, rotten Tanners Bark or other decayed Mulch, it

will prevent the Earth from drying, so that the Layers will not require watering above 3 or 4 Times, which should not be at less than 5 or 6 Days Interval; for when these Layers have too much Wet, the tender Shoots frequently rot, or when the young Fibres are newly put out, they are so tender, as to perish by much Wet: Where the Method here directed is practised, the Layers will more certainly take Root, than any other.

As these Plants have all of them climbing Branches, they should be always planted where they may be supported, otherwise the Branches will fall to the Ground and appear unsightly; so that unless properly disposed, instead of being Ornaments to a Garden, they will become the reverse. Where there are Arbours or Seats with Trellis Work round them, these Plants are very proper to train against it; or where any Walls or other Fences require to be covered from the Sight, these Plants are very proper for the Purpose; but they are by no means proper for open Borders, nor do they answer the Expectation when intermixed with Shrubs; for unless their Branches have room to extend, they will not produce many Flowers.

The Sort with double Flowers is the most beautiful, and should be preferred to the single, of which a few only should be planted for Variety. They are all equally hardy, so are seldom injured by Frost, excepting in very severe Winters, when sometimes the very tender Shoots are killed, but if these are cut off in Spring, the Stems will put out new Shoots.

The 10th, 11th, and 16th Sorts are also very hardy Plants, and have climbing Branches, so may be disposed in the same Manner as the other: They are also propagated by Layers, which will succeed, if performed at the same time, and Manner as directed for them.

The other Sorts are Natives of the warmest Parts of *America*, so will not thrive in this Country, unless preserved in Stoves; but as these are great Ramblers and Plants of no great Beauty, they are seldom preserved in *Europe* but in Botanick Gardens for Variety. These may be propagated by Layers as the other Sorts; or may be raised from Seeds obtained from the Countries where they naturally grow; but these must be treated as other exotics from the same Country.

CLEOME. *Lin. Gen. Plant.* 740. *Sinapisitrum*. *Tourn. Infl. R. H.* 231. *Tab.* 116.

The Characters are,

The Flower hath a four leaved Empalement which spreads open: It hath four Petals which are inclined upward and spread open, the lower being less than the other; in the Bottom there are three mellous Glands which are roundish, and are separated by the Empalement. It hath six or more Stamina which are incurved, having rising Summits fixed to their Side: It hath a single Style supporting an oblong Germen, of the same Length of the Stamina, and crowned by a thick Stigma. The Germen afterward becomes a long cylindrical Pod sitting upon the Style, having one Cell opening with two Valves, and filled with roundish Seeds.

The Species are,

1. *CLEOME floribus gynandris, foliis digitatis. Hort. Cliff.* 341. Cleome with Flowers having male and female Parts, and fingered Leaves. This is the *Sinapisitrum Indicum, pentaptyllum flore carneo, minus, non spinosum*.

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nosum. H. L. Five leaved smaller Indian Bastard Mustard, with a Flesh coloured Flower and no Spines.

2. *CLEOME floribus hexandris, foliis ternatis; foliolis lanceolatis*. Lin. Sp. Plant. 672. Cleome with Flowers having six Stamina, trifoliate Leaves, and Spear-shaped Lobes. This is the *Sinapisrum Orientale, triphyllum, ornithopodii filiquis*, Tourn. Eastern Bastard Mustard, with 3 Leaves, and Pods like Birds-foot Trefoil.

3. *CLEOME floribus hexandris, foliis ternatis, foliolis lineari-lanceolatis, filiquis bivalvibus*. Cleome with Flowers having six Stamina, trifoliate Leaves, narrow Spear-shaped Lobes, and Pods having two Valves. This is the *Sinapisrum Lusitanicum triphyllum, flore rubro*. Tourn. Inst. R. H. 231. Three leaved Portugal Bastard Mustard with red Flower.

4. *CLEOME floribus dodecandris, foliis quinatis ternatisque* Flor. Zeyl. 241. Cleome with Flowers having 12 Stamina, trifoliate and quinquefoliate Leaves. This is the *Sinapisrum Zeylanicum, triphyllum & pentaphyllum viscosum, flavo Mart. Dec. 3*. Viscous Bastard Mustard of Ceylon with 3, and five Leaves, and a yellow Flower.

5. *CLEOME floribus hexandris, foliis ternatis, foliolo intermedio majori*. Cleome with Flowers having six Stamina, and trifoliate Leaves, whose middle Lobe is the largest. This is the *Sinapisrum Indicum triphyllum, flore carneo non spinosum*. Indian 3 leaved Bastard Mustard, without Spines, and a Flesh coloured Flower.

6. *CLEOME floribus hexandris, foliis septenis, caule spinoso, filiquis pendulis*. Cleome with Flowers having six Stamina, Leaves with seven Lobes, a prickly Stalk, and hanging Pods. This is the *Sinapisrum Egyptiacum heptaphyllum, flore carneo, majus, spinosum*. H. L. Greater prickly, Egyptian Mustard, with seven Leaves, and a Flesh-coloured Flower.

7. *CLEOME floribus hexandris, foliis quinatis ternatisque, caule spinoso*. Cleome with Flowers, having six Stamina, Leaves composed of five and three Lobes, and a prickly Stalk. This is the *Sinapisrum Indicum spinosum, flore carneo, folio trifido vel quinquesido*. Houst. Mss. Prickly Indian Bastard Mustard, with a Flesh coloured Flower, and Leaves divided into three or five Lobes.

8. *CLEOME floribus hexandris, foliis simplicibus, ovato lanceolatis* Flor. Zeyl. 243. Cleome with six Stamina to the Flowers, and single Leaves, which are ovally Spear-shaped. This is the *Sinapisrum Zeylanicum viscosum, folio solitario, flore flavo, filiqua tenui*. Burm. Thes. 217. Viscous Bastard Mustard of Ceylon, with a single Leaf, a yellow Flower and slender Pod.

The 1st Sort grows naturally in Asia, Africa, and America, I received the Seeds of it from Aleppo, and the Coast of Guinea, and in the Earth which came from the West-Indies with other Plants; this hath come up as a Weed. It rises with an herbaceous Stalk about nine Inches high, garnished with smooth Leaves, composed of five small Leaves or Lobes, joining at their Base to one Center; and spread out like the Fingers of a Hand. The Leaves on the lower Part of the Stalk stand upon long Foot Stalks, gradually shortened to the Top of the Stalk; where they almost join it: The Flowers are produced in loose Spikes at the End of the Stalks; these have four Petals of a Flesh Colour, which stand erect, spreading from each other, and below these are placed the Stamina and Style which coalesce at the Bottom, and

are stretched out beyond the Petals, where they spread open; the Germen which sits upon the Style, becomes a taper Pod, about two Inches long, filled with round Seeds. This is an annual Plant which dies soon after the Seeds are ripe.

The 2d Sort grows naturally in the Levant, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris, and from thence most of the Botanick Gardens in Europe have been furnished with it: This rises with an upright Stalk, about eight Inches high, garnished with Leaves composed of three Spear-shaped Lobes, standing upon short Foot Stalks; the Flowers come out singly from the Side of the Stalks, and have four red Petals, which stand in the same Form as those of the former Sort: These are succeeded by slender Pods two Inches long, which swell in every Division, where each Seed is lodged, so as to appear like Joints, as those do of the Bird's-foot Trefoil; when the Seeds are ripe, the whole Plant decays. If the Seeds are sown in Autumn the Plants will flower in June, and their Seeds ripen in August, but those sown in Spring do not flower till July; so that unless the Season proves favourable, the Seeds will not ripen: If the Seeds of this Sort are permitted to scatter, the Plants will come up without Care, and require only to be thinned and kept clean from Weeds; for they will not bear transplanting.

The 3d Sort grows naturally in Portugal and Spain, from whence I received the Seeds. This Sort rises with an herbaceous Stalk about a Foot high, sending out a few short Side Branches garnished with Leaves composed of three narrow Lobes, standing on short Foot Stalks. The Flowers come out singly from the Side of the Stalks, of a deep red Colour; and are succeeded by thick taper Pods, filled with round Seeds. This is an annual Plant, which will thrive in the open Air, and requires the same Treatment as the former.

The 4th Sort grows naturally in the Island of Ceylon, from whence the Seeds were brought to Holland, where they succeeded and some were sent me by the late Dr. Boerhave; this rises a Foot and a half high, sending out several Side Branches, garnished with Leaves, some of which have five, and others three roundish Lobes standing upon short hairy Foot Stalks of the Leaves, they are of a pale yellow, and are succeeded by taper Pods, between two and three Inches long, ending in a Point, and full of round Seeds. The whole Plant sweats out a viscous clammy Juice. This is also an annual Plant.

The fifth Sort was sent me from Jamaica, in 1730. This is an annual Plant which rises two Feet high, sending out many Side Branches garnished with Leaves, with one large Spear-shaped Lobe in the Middle, and two very small ones on the Side; these sit close to the Branches. The Flowers come out singly from the Side of the Branches upon long Foot Stalks: These have four large Flesh coloured Petals, and six long Stamina, which stand out beyond the Petals, when the Flowers fade, the Germen which sits upon the Style becomes a taper Pod, four Inches long filled with round Seeds.

The 6th Sort was sent me from Jamaica, by the late Dr. Housloun, who found it growing naturally there in great Plenty. It also grows naturally in Egypt. This rises with a strong thick herbaceous Stalk two Feet and a Half high, dividing into many Branches, garnished with

with Leaves composed of seven long Spear-shaped Lobes, joining in a Center at their Base, where they sit upon a long slender Foot Stalk: Just below the Foot Stalk, comes out one or two short thick yellow Spines which are very sharp. The Flowers come out singly from the Side of the Branches, forming a long loose Spike at their Extremities; this Spike hath single broad Leaves, which half surround the Stalks at their Base, from the Bosom of which, come out the Foot Stalks of the Flowers, which are two Inches long, each sustaining a large Flesh coloured Flower, whose Style and Stamina are extended two Inches beyond the Petals. After the Flower is past, the Germen which sits upon the Style, becomes a thick taper Pod five Inches long, which hangs downward, and is filled with round Seeds. This is also an annual Plant which perishes soon after the Seeds are ripe.

The 7th Sort was sent me from the *Havannab* in 1731. This is also an annual Plant, which rises near two Feet high, branching out on every Side: The lower Leaves are composed of five oblong Lobes standing upon long Foot Stalks, but those on the Stalks and Branches have three Lobes, and have short Foot Stalks: the main Stalk and also the Branches, are terminated by loose Spikes of purple Flowers, each sitting upon a slender Foot Stalk, at the Base of which, is placed a single oval Leaf. The Stalks are armed with slender stiff Spines situated just under the Foot Stalks of the Leaves, when the Flowers fade, the Germen becomes a taper Pod, two Inches long, filled with round Seeds.

The 8th Sort grows naturally in *Ceylon*; this is an annual Plant which rises with an herbaceous Stalk a Foot high, which is garnished with long narrow single Leaves, standing alternately on the Stalks; from the Wings of the Leaves come out the Foot Stalks of the Flower, each sustaining a single yellow Flower, which is succeeded by a very slender taper Pod. All these Plants except the 2d and 3d Sorts, are Natives of very warm Countries, so will not thrive in *England*, without artificial Heat; therefore their Seeds must be sown upon a good hot Bed in Spring, and when the Plants are fit to remove, they should be planted in separate small Pots, filled with fresh light Earth, and plunged into a fresh hot Bed, observing to shade them until they have taken fresh Root; after which they should have Air admitted every Day, in Proportion to the Warmth of the Season, and their Waterings should be frequently repeated, but not in too great Plenty; when the Plants have filled these small Pots with their Roots, they should be put into larger, and plunged again into a hot Bed, to bring the Plants forward; in *July*, when the Plants are too tall to remain longer in the hot Bed, they should be removed into an airy Glass Case, where they may be screened from Cold and Wet, but in warm Weather may enjoy the free Air. With this Management the Plants will flower soon after, and perfect Seeds in Autumn. The 2d and 3d Sorts may be sown in the open Borders of the Garden, where they are designed to remain; for they do not require any artificial Warmth.

CLÉTHRA. *Gron. Fl. Virg.* 43. *Lin. Gen. Plant.* 489.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is cut into five Parts; it hath five oblong Petals, which are longer than the Empalement; it hath ten Stamina

as long as the Petals, and terminated by oblong erect Summits; in the Center is situated a roundish Germen supporting a permanent erect Style, crowned by a trifid Stigma. The Germen becomes a roundish Capsule inclosed by the Empalement, having three Cells, which are full of angular Seeds.

We know but one Species of this Genus at present, viz.

CLÉTHRA. *Gron. Virg.* 47. There is no English Title to this Plant. It is the *Alnifolia Americana serrata, floribus pentapetalis albis in spicam dispositis* Pluk. *Alm.* 18. American Shrub with an Alder, sawed, Leaf, and white, five leaved Flowers, disposed in a Spike.

This Shrub is a Native of *Virginia* and *Carolina*, where it grows in moist Places, and near the Sides of Rivulets, rising to the Height of eight or ten Feet, but in this Country it rarely rises to half that Height: The Leaves are in Shape like those of the Alder-Tree; but are longer; these are placed alternately upon the Branches: The Flowers are produced at the Extremity of the Branches, in close Spikes: They are composed of five Leaves, are white, and have ten Stamina in each, which are nearly of the same Length with the Petals, this Plant flowers in *July*, and when the Autumns prove favourable, there are often some Spikes of Flowers again in *October*.

This is hardy enough to bear the open Air of *England*, and is one of the most beautiful Shrubs at the Season of its flowering; which is very little later than in its native Country, being commonly in flower here by the Beginning of *July*, and if the Season is not very hot, there will be part of the Spikes in beauty till the Beginning of *August*; and as most of the Branches are terminated with these Spikes of Flowers, so when the Shrubs are strong, they make a fine Appearance at that Season.

This Shrub will thrive much better in moist, than in dry Ground; and requires a sheltered Situation, where it may be defended from strong Winds, which frequently break off the Branches, where they are too much exposed to its Violence. It is propagated by Layers; but they are generally two Years before they get Root, so that at present, it is very rare in *England*. The finest Shrubs of this Kind, which I have yet seen, are in the curious Gardens of his Grace the Duke of *Argyll*, at *Whitton*, near *Hounslow*, where they thrive as well as in their native Country. They may also be propagated by Suckers, which are sent out from their Roots; if these are carefully taken off with Fibres in the Autumn, and planted into a Nursery Bed, they will be strong enough in two Years to transplant where they are to remain.

It may also be propagated by Seeds, which must be procured from the Countries where it grows naturally, for they do not ripen in *England*. But as these seldom arrive till Spring, so when they are sown at that Season, the Plants will not come up till the following Spring. Therefore the Seeds should be sown in Pots, and placed in a shady Situation till Autumn, then placed under a Frame in Winter; the Plants will come up the next Spring, and in Autumn may be transplanted into a Nursery Bed, to get Strength before they are placed out to remain.

CLIFFORTIA. *Lin. Gen. Plant.* 1004.

The Name was given to this Genus of Plants by Dr. *Linnaeus*, in Honour to Mr. *George Clifford* of *Amsterdam*; a great Collector of Plants, and a Patron of Botanists, who has printed a Folio Book of the Plants in his

his Garden, with several Copper-Plates, exhibiting the Figures of many of the most curious Plants. We have no English Name for it.

The Characters are,

It hath male and female Flowers in different Plants : the male Flowers have a spreading Empalement, composed of three small oval concave Leaves. It hath no Petals, but a great number of hairy upright Stamina, the Length of the Empalement, terminated by compressed oblong twin Summits. The female Flowers have a permanent Empalement composed of three Leaves which are equal, sitting upon the Germen ; these have no Petals, but the oblong Germen which is situated below the Empalement, supports two long slender feathered Styles, terminated by a single Stigma ; the Germen becomes an oblong taper Capsule, with two Cells crowned by the Empalement, including one narrow taper Seed.

The Species are,

1. CLIFFORTIA foliis subcordatis, dentatis, Lin. Sp. Plant. 1308. Cliffortia with Heart-shaped, indented Leaves : This is the *Arbuscula Afr. foliis acuto ilicis caulem amplexo rigido*, Boer. Ind. African Shrub, with an acute illex Leaf, which is rigid, and embraces the Stalk.

2. CLIFFORTIA foliis ternatis, intermedio tridentato Prod. Leyd. 253. Three leaved Cliffortia, whose middle Leaf is cut in three Parts : This the *Myrica foliis ternatis, intermedii cuneiformibus tridentatis*, Hort. Cliff. 456. *Myrica* with trifoliate Leaves, the middle ones being Wedge-shaped, and divided into three Parts.

3. CLIFFORTIA foliis lanceolatis, integerrimis, Hort. Cliff. 463. Cliffortia with Spear-shaped Leaves which are entire. This is the *Frutex Ethiopicus Conifer, fructu parvo, sparsim intra folia rusci, seminibus cylindraceis*. Cone-bearing Ethiopian Shrub, with a small Fruit, growing scatteringly between Butcher-broom Leaves, and cylindrical Seeds.

The first Sort grows naturally at the Cape of Good-Hope, but hath been long cultivated in many of the English Gardens, however it was not reduced to any Genus, till Dr. Linnæus established this, and gave it the Title. By some former Writers it was called *Campbo-rata* ; to which Genus it had no Relation.

It rises with a weak shrubby Stalk, four or five Feet high, sending out many diffused Branches, which spread out on every Side, requiring some Support : These are garnished with Leaves, which are Heart-shaped at their Base, but broad at their Ends, where they are sharply indented. These are very stiff, of a grayish Colour, and closely embrace the Stalks with their Base, they are placed alternate on the Branches ; and from the Bosom of these arise a single Flower, sitting close to the Branch, having no Foot Stalk. Before the Empalement is spread open, it forms a Bud, in Shape and Size of those of the *Caper* ; this Empalement is composed of three green Leaves, which afterwards spread open, and then the numerous Stamina appear standing erect ; these as also the inner Surface of the Empalement, are of a yellowish green Colour. The Flowers appear in June, July, and August, but the Leaves continue in Verdure through the Year.

All the Plants I have seen of this Sort, in the English or Dutch Gardens, were male, nor have I heard of any female Plants in any of the European Gardens.

This Plant is easily propagated by Cuttings, which

may be planted in any of the Summer Months, if these are planted in small Pots filled with light Earth, and plunged into a moderate hot Bed they will soon take Root, provided they are screened from the Sun, and duly watered ; when they have taken Root, they must be gradually inured to bear the open Air, to prevent their drawing up weak : Therefore they should be placed abroad till they have obtained some Strength, then they may be each transplanted into a small Pot, and placed in the Shade until they have taken fresh Root, after which they may be placed with others of the hardy Kinds of exotic Plants, in a sheltered Situation till October, when they should be removed into the Green-house, or placed under a common hot Bed Frame, where they may be screened from the hard Frost, but enjoy the free Air at all Times when the Weather is mild.

When the Plants advance in Height, their Stems and Branches must be supported, otherwise they will trail on the Ground. In Summer they must be placed in the open Air, with Myrtles and other hardy Green-house Plants, and in Winter the Plants may be treated in the same Manner, but must have little Water. This Plant has endured the cold of our ordinary Winters, planted near a South-West Wall without Covering ; but in severe Winters they are always destroyed.

The 2d Sort is a Native of the same Country as the first, this hath very slender ligneous Stalks, which must be supported ; otherwise they will fall to the Ground. These send out slender Branches on every Side, closely garnished with trifoliate Leaves standing close to the Branches ; the middle Lobes of these are much larger than the two Side, and are indented in three Parts. The Flowers come out from the Bosom of the Leaves, having very short Foot Stalks, and are shaped like those of the 1st, but smaller ; these appear in July and August. Of this Sort we have only male Plants in the English Gardens, which can only be propagated by Layers ; and as these are two Years before they take Root, the Plants are at present very rare in England. This Sort requires the same Management as the first, and is equally hardy, but must not be over watered in Winter. The Leaves continue green all the Year, and being singularly shaped, they make a Variety in the Green-house during the Winter Season.

The 3d Sort rises with a weak shrubby Stalk, about four Feet high, sending out lateral Branches covered with a whitish Bark, and garnished with Leaves placed in Clusters without Order ; these are stiff, of the Consistence and Colour of the Butchers Broom but are narrower, and run out to a longer Point. Between these Clusters of Leaves the Flowers come out in loose Bunches, these have a great Number of yellowish Stamina, included in a three leaved Empalement. We have only the male Plant of this Sort, which is very difficult to propagate, so is very rare in Europe at present.

This Plant is tenderer than either of the former Sorts ; so should be placed in a good warm Green-house in Winter, and during that Season, they must have but little Water. In the Summer they may be exposed to the open Air in a sheltered Situation, but they should not remain abroad too late in the Autumn ; for if there should be much Rain at that Season, it would endanger these Plants, if they are exposed to it.

CLINOPODIUM. Lin. Gen. Plant. 644. Tourn. Inst. R. H. 194. Tab. 92. Field Basil.

The Characters are,

It hath an Involucrum cut into many Parts, and is the Length of the Empalement, upon which the Whorls sit. The Empalement is of one Leaf, with a cylindrical Tube divided into two Lips; the upper Lip is broad, trifid, acute, and reflexed; the under Lip is cut into two narrow Segments, which turn inward. The Flower is of the Lip Kind, with a short Tube enlarging to the Mouth; the upper Lip is erect, concave, indented at the Top, and obtuse; the under Lip is trifid and obtuse, the middle Segment being broad and indented. It hath four Stamina under the upper Lip, two of which are shorter than the other, they are terminated by roundish Summits; in the Center is situated the quadripartite Germen, supporting a slender Style the Length of the Stamina, crowned by a single compressed Stigma. The Germen become four oval Seeds shut up in the Empalement.

The Species are,

1. CLINOPODIUM capitulis subrotundis, hispidis, bracteis setaceis. Lin. Sp. Plant. 587. Field Basil with roundish prickly Heads, and bristly Bractæa. This is the *Clinopodium Origano simile, elatius, majore flore*. C. B. P. 225. Common English Field Basil.

2. CLINOPODIUM Menthae folio incanum, & odoratum. Hort. Elth. 87. Hoary sweet smelling Field Basil with a Mint Leaf.

3. CLINOPODIUM rugosum, capitulis scabiosæ. Hort. Elth. 88. Rough Field Basil with Heads like the Scabious.

4. CLINOPODIUM Americanum humile, foliis rugosioribus. Dale. Low American Field Basil with rougher Leaves.

5. CLINOPODIUM Americanum, erectum, non ramosum foliis longioribus, internodiis longissimis. Dale. American Field Basil with upright unbranching Stalks, longer Leaves, and the Joints at a very great Distance.

6. CLINOPODIUM Egyptianum, vulgari simile. Dill. Egyptian Field Basil like the common.

The 1st Sort grows naturally by the Side of Hedges, and in Thickets, in most Parts of England; this hath a perennial fibrous Root, which sends up several stiff square Stalks, a Foot and a Half high, which send out a few lateral Branches toward the Top, garnished with oval hairy Leaves, placed by Pairs, opposite; at the Top of the Stalks the Flowers come out in round Whorls, or Heads; one of these terminate the Stalk, and there is generally another which surrounds the Stalk at the Joint next below it. The Flowers are sometimes purple, at others white, for they vary from one Colour to the other, when they are propagated by Seeds, so that both Colours are found naturally in the Fields. The Whorls (or Heads) grow very close, and each Foot Stalk sustains several Flowers, each Flower hath a tubular Empalement, which ends in five sharp Points, which stand erect; at the Base of the Empalement stand two bristly Spines, which *Linnaeus* terms the Bractæa; these stand almost horizontal under the Empalement. The Flower is of the labiated, or Lip Kind, according to *Ray*, &c. which is now styled Ringent, or Grining, from the Likeness of the upper Part to the Mouth, or Chaps of Animals. The upper Lip is broad and trifid, but the under is cut into 2 narrow Segments; each Flower is succeeded by 4 naked Seeds, sitting at the Bottom of the Empalement. It flowers in June.

The 2d Sort grows naturally in *Pennsylvania* and *Carolina*, from both these Countries I have received the Seeds; this hath a perennial Root, which sends up many square Stalks about 2 Feet high, which put out a few short Side Branches toward the upper Part; these are garnished with oblong oval Leaves, about the Size of those of Water Mint, standing by Pairs opposite, close to the Stalk; they are hoary, and soft to the Touch, and have a strong Odour, between that of Marjoram and Basil. The upper Surface of the Leaves are of a pale green, but their under Side is hoary and woolly, and they are slightly indented on their Edges. The Flowers grow in flat smooth Whorls round the Stalks, each Stalk hath generally three of these Whorls, the upper which terminates the Stalk being smaller, the two other increasing, so that the lower is the greatest. The Flowers are of a pale purple Colour, and shaped like those of the 1st Sort, but the Stamina of this stand out beyond the Petal, and the Bractæa at the Base of the Empalement are large, Spear-shaped, and indented on their Sides. This Plant is called Snake-weed in some Parts of *America*, supposing it a Remedy for the Bite of Rattle Snakes. It flowers in July in England.

The 3d Sort grows naturally in *Carolina*, from whence the Seeds were sent me by the late Dr. Dale; this hath a perennial Root, which sends up several square Stalks, closely covered with brownish Hairs; these rise between 2 and 3 Feet high, they are garnished with Leaves, which are very unequal in their Size, those at the Bottom, and also toward the Top being above 3 Inches long, and one Inch and a Quarter broad, whereas those in other Parts of the Stalk, are not half so large; these are rough on their upper Side, hairy below, sawed on their Edges, and stand opposite by Pairs: All the lower Part of the Stalk, but immediately below the Foot Stalks of the Flower Heads, there are 3 large Leaves standing round the Stalks; between these arise 2 slender hairy Foot Stalks, about 3 Inches long, one on each Side the Stalk; these sustain small Heads of Flowers, shaped like those of the Scabious; they are white, shaped like those of the other but smaller, the Bractæa immediately under the Empalement, spread out like Rays. This Plant flowers in September in this Country.

The Seeds of the 4th Sort were sent me from *Carolina*; this hath some Appearance of our common Sort, but the Stalks do not grow more than half so high, and divide into many long Side Branches; the Leaves are smaller and rougher, and the Whorls of Flowers are produced half the Length of the Branches; whereas the common Sort hath rarely more than two; the Bractæa at the Base of the Empalement is also much longer. This flowers in June and July, and hath a perennial Root.

The 5th Sort was sent me from *Carolina*; this hath a perennial Root, which sends up strait hairy Stalks, which are almost round; the Joints of these are four or five Inches asunder, at each of these come out two oblong Leaves, hairy on their under Side, standing upon short Foot Stalks; at the Bottom of these come out on each Side, a slender Branch, Half an Inch long, having two or four small Leaves, shaped like the other. The Flowers are produced in small Whorls, standing thinly; these are white, and the Bractæa are longer than the Empalement. This flowers in August.

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The 6th Sort is a Native of *Egypt*, from whence the Seeds were sent to *Europe*, and the Plants have for some Years past grown in many curious Gardens. It hath a perennial Root, but annual Stalks which grow a Foot and a half high. These are garnished with oval Leaves, having many transverse deep Furrows, and are of a dark green Colour, placed opposite, at about five or six Inches asunder. There are commonly two or four Side Branches from the main Stems, produced toward the Bottom; and the Whorls of Flowers are produced at every Joint toward the upper Part of the Stalks: These are pretty large and hairy. The Flowers are somewhat larger than those of the common Field Basil, and are of a deeper Colour, stretching a little more out of the Empalement. The Leaves of this have at first Sight much the same Appearance; but when observed with Attention, the Difference is soon observed: But the greatest consists in the Leaves and Whorls of Flowers being placed at a greater Distance, and the Stalks growing sparsely in this Species; nor do the Plants continue so long as those of the common Sort.

This flowers in *June*, commonly 2 or 3 Weeks before the common *Field Basil*, and the Seeds ripen in *September*; which, if permitted to scatter, the Plants will come up in *Autumn*; and if the Winter proves favourable, will live in the open Air, provided they grow on a dry Soil; but in moist Ground they are frequently destroyed, especially when the Plants are young.

This Plant approaches near to the *Clinopodium Orientale Origani folio, flore minimo*. *Tourn. Corol.* 12. But by comparing this with a Specimen of that Sort from the *Paris Garden*, I find the Leaves of that are smoother, and placed much nearer together on the Stalks than those of this Sort, and the Flowers are smaller; so that it may be deemed a distinct Species, as these Differences are permanent, and do not alter in any of the Plants which arise from the Seeds.

These Plants may be propagated by Seeds, and by parting their Roots, the latter is generally practised in *England*, because few of the Sorts perfect Seeds here. The best Time to part and transplant their Roots is in *Autumn*; if these are planted in a dry Soil, they are all except the third Sort, hardy enough to thrive in the open Air in *England*, and require no Care but to keep them clean from Weeds; every other Year they may be parted and transplanted.

The 3d Sort must be planted in Pots, and in Winter sheltered under a Frame, where they may enjoy the free Air in mild Weather, but screened from Frost.

CLITORIA. *Lin. Gen. Plant.* 796. *Ternatea*. *Tourn. Art. Reg.* 1706. *Clitorius*. *Dill. Hort. Elth.* 76. We have no *English* Title for this Plant.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is tubular, erect, and indented in five Parts at the Top. The Flower is of the Butterfly Kind, having a large spreading Standard, erect and indented at the Top; the two Wings are oblong, obtuse, and shorter than the Standard, which is closed. The Keel is shorter than the Wings; it is roundish and hooked. It hath 10 Stamina, 9 of which are joined, and one stands separate, which are terminated by single Summits; in the Center is an oblong Germen, supporting a rising Style, crowned by an obtuse Stigma. The

Germen becomes a long narrow compressed Pod, with one Cell, opening with two Valves, inclosing several Kidney-shaped Seeds.

The Species are,

1. CLITORIA foliis pinnatis. *Hort. Cliff.* 360. *Clitoria* with winged Leaves. This is the *Ternatea flore simplici caeruleo*. *Tourn. Ternatea* with a single blue Flower.

2. CLITORIA foliis ternatis, calycibus campanulatis solitariis. *Hort. Upsal.* 215. *Clitoria* with trifoliate Leaves, and a single Flower with a Bell-shaped Empalement. This is the *Planta leguminosa Brasiliensis, Phaseoli flore, flore purpureo maxima*, *Breyn. Cent.* 78. *Tab.* 32. Leguminous Plant of *Brasil* with a Kidney-bean Flower, which is large, and of a purple Colour.

3. CLITORIA foliis ternatis, calycibus campanulatis geminis. *Flor. Virg.* 83. Three leaved *Clitoria* with two Flowers joined, whose Empalements are Bell-shaped. This is the *Clitorius trifolius flore minore caeruleo*. *Hort. Elth.* Three leaved *Clitorius* with a smaller blue Flower.

4. CLITORIA foliis ternatis, calycibus cylindricis. *Lin. Sp. Plant.* 753. *Clitoria* with trifoliate Leaves, and cylindrical Empalements to the Flowers. This is the *Clitorius Marianus trifolius subtus glaucis*. *Pet. Hort. Sicc.* 243. Three leaved *Clitorius* of *Maryland*, whose Leaves are of a Sea green on their under Side.

The 1st Sort grows naturally in *India*, the Seeds were first brought to *Europe* from *Ternate*, one of the *Molucca* Islands, which induced *Dr. Tournefort* to give it the Title of *Ternatea*. There is a Variety of this with white Flowers, and another with large blue Flowers, which make a fine Appearance. The Seeds which I received of the latter, produced Plants with very double Flowers, without the least Variation, but these Plants did not produce any Pods here.

This rises 4 or 5 Feet high, with a twining herbaceous Stalk, like the *Kidney-bean*, and requires Support; in the Places where it grows naturally, it twists about the neighbouring Plants; the Stalks are garnished with winged Leaves, composed of two or three Pair of Lobes, terminated by an odd one; these are of a beautiful green, and placed alternate on the Stalks; from the Appendages of the Leaves, come out the Foot Stalks of the Flowers; each of these is encompassed by two very fine Leaves about the Middle, where they are bent, sustaining a very large gaping beautiful Flower, whose bottom Part seems as if growing to the Top.

The Flowers have a green membranaceous Empalement, which is cut into five Parts. The Standard of the Flowers is large, and is spread open very wide, and the Flowers are of so deep a blue Colour, as to stain Paper, after having been many Years dried, almost as blue as Indigo; these Flowers are succeeded by long slender Pods, containing several Kidney-shaped Seeds.

The 2d Sort grows naturally in the *Brasils*, from whence the Seeds were brought to *Europe*; this hath a twining Stalk like the former, which rises 5 or 6 Feet high, and is garnished at each Joint with one trifoliate Leaf, standing upon a long Foot Stalk. The Flowers come out singly from the Foot Stalk of the Leaves, standing upon pretty long Foot Stalks, which are encompassed about the Middle with two small oval Leaves; the Flowers are very large, the Standard being much broader than that of the first Sort, and the two Wings

are larger; the Flowers are of a fine blue Colour, so make a fine Appearance. The Flowers appear in July, and in warm Seasons the Seeds will ripen in Autumn, soon after which the Plants decay.

There is one with a double Flower of this Sort, which I raised in the Chelsea Garden some Years past, from Seeds sent me from India, but the Plants did not produce Seeds here, and being annual, the Sort was lost. The Flowers of this were very beautiful.

The Seeds of the 3d Sort were sent me from the *Babam* Islands; this sends out from the Root 2 or 3 slender twining Stalks, which rise to the Height of 6 or 7 Feet, and are garnished at each Joint with one trifoliate Leaf, whose Lobes are oblong, and pointed. At the opposite Side of the Stalk, the Foot Stalk of the Flower arises, which is little more than an Inch long, naked, and sustains a single Flower, of a purple Colour within, but of a greenish white on the Outside, not half so large as either of the former. These Flowers are each succeeded by long, slender, compressed Pods, ending in a Point, which contain one Row of roundish Kidney-shaped Seeds. This Sort flowers in July and August, and the Seeds ripen in Autumn.

The Seeds of the 4th Sort, were sent me from *Carolina*, where the Plants grow naturally. This rises with a twining weak Stalk about 5 Feet high, and is garnished with trifoliate Leaves like the former, whose Lobes are narrower, and of a grayish Colour on their under Side; the Flowers come out by Pairs on the Foot Stalks, and their Empalements are cylindrical: The Flowers are small, and of a pale blue Colour within, but of a dirty white on the Outside. This flowers in August, but rarely ripens any Seeds in England.

All these Sorts are annual with us in England, so that unless the Seeds ripen, the Species are lost; as the two Sorts with double Flowers, have not formed any Pods in this Country, so far as I have been able to learn; therefore the Seeds of these must be procured from the Countries where they naturally grow. Indeed these are supposed to be only Varieties, which accidentally arise from the single: If this be true, I cannot account for the Success of those Plants which grew at *Chelsea*, for they were all of the same double Kind, without the least Variation: And this was not from a single Experiment, but in three different Years when I received the Seeds, the Plants did all of them produce double Flowers.

The Seeds of these Plants must be sown upon a good hot Bed early in the Spring, and when the Plants are two Inches high, they should be carefully taken up, and each planted in a small Pot filled with light fresh Earth and plunged into a hot Bed of Tanners Bark, observing to shade them till they have taken fresh Root, and refresh them with Water as they may require it. After they are well rooted in the Pots, they must have Air every Day in Proportion to the Warmth of the Season, to prevent their drawing up weak; their Waterings should be repeated two or three times a Week, a little each time. As these Plants have climbing Stalks, they will soon grow too tall to remain under common Frames, therefore they must then be removed into the Stove, and plunged in the Bark Bed; but if their Roots have filled the Pots, they should be removed into larger; and afterward they must be treated as other Plants from the same Countries.

CLUSIA. *Lin. Gen. Plant.* 577. *Plum. Nov. Gen.* 23. *Tab. 20.* The Balsam Tree.

The Characters are,

The Flower hath a permanent Empalement, composed of 5 roundish concave Leaves which spread open; it hath 5 large roundish concave spreading Petals. In the Bottom is situated a globular Nectarium, including the Germen, which is pervious at Top, from which Place the Stigma arises. It hath a great Number of single Stamina, which are shorter than the Petals, and terminated by single Summits; the oblong oval Germen is terminated by a plain Star-like Stigma with 6 obtuse Indentures. The Germen becomes an oval Capsule with 6 Furrows, and 6 Cells, opening with 6 Valves, which spread in Form of a Star, including many angular Seeds fixed to a Column, surrounded with Pulp.

The Species are,

1. *CLUSIA foliis crassis subrotundis nitidis, caule arboreo.* *Clusia* with thick shining roundish Leaves, and a Tree-like Stalk. This is the *Terebinthus folio singulari, non alato, rotundo, succulento flore pallide luteo.* *Sloan. Hist. Jam.* 2. p. 97. Turpentine Tree with a single round succulent Leaf, and a palish yellow Flower, commonly called Balsam Tree in America.

2. *CLUSIA foliis venosis.* *Lin. Sp. Plant.* 510. *Clusia* with veined Leaves. This is the *Clusia flore roseo minor, fructu flavescens.* *Plum. Nov. Gen.* 2. Lesser *Clusia* with a smaller Rose Flower, and a yellowish Fruit.

There are two or three Varieties of the first Sort, which differ in the Size and Colour of their Flowers and Fruit; one hath a white Flower and scarlet Fruit, another hath a Rose Flower and a greenish Fruit; and a third hath a yellow Fruit: But these are supposed to be only femal Variations; though *Plumier* has enumerated them as distinct Species, but as the Plants have not flowered in England, I can give no particular Account of their Difference, the singular Beauty of the Leaves, renders it worthy of a Place in every Collection of rare Plants.

The 1st Sort is pretty common in the *British* Islands of America, where the Trees grow to the Height of 20 Feet, and shoot out many Branches on every Side, furnished with thick round succulent Leaves placed opposite by Pairs. The Flowers are produced at the Ends of the Branches, each having a thick succulent Cover: These Flowers are of different Colours in different Plants, some being red, others yellow, some white, and some green: After the Flowers are past, they are succeeded by oval Fruit, which are also of different Colours in different Plants: From every Part of these Trees there exudes a Sort of Turpentine, which is called in the *West Indies* Hog-gum; because they say, that, when any of the wild Hogs are wounded they repair to these Trees, and rub their wounded Parts against the Stems, till they have anointed themselves with this Turpentine, which heals their Wounds: The Turpentine of these Trees is greatly recommended for the Cure of Sciaticas, by spreading it on a Cloth, and applying it as a Plaster to the Part affected.

These Plants are at present very rare in Europe: There were some Years ago some fine Plants in the Garden of Mr. Parker, near Croydon in Surry; these were brought over growing in Tubs of Earth from *Barbadoes*, which is the best Method of procuring them; for the Seeds seldom succeed; and the young Plants grow so slowly, as not to make any Figure in some Years; in bringing over the Plants

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Plants, great Care should be had, that they do not receive much Wet; for as they have very succulent Stems, Moisture will cause them to rot.

As these Plants are tender; so they must be constantly kept in the Stove, otherwise they will not live through the Winter in England; they must also be watered very sparingly, especially in Winter; for these Plants naturally grow in those Parts of the Islands, where it seldom rains; therefore they cannot bear much Moisture.

They may be propagated by Cuttings, which must be laid to dry after they are cut from the Plants for ten Days or a Fortnight, that the wounded Part may be healed over, otherwise they will rot: When the Cuttings are planted, the Pots should be plunged into a hot Bed of Tanners Bark, and now and then gently refreshed with Water: The best Time for planting these Cuttings is in July, that they may be well rooted before the cold Weather comes on in Autumn. In Winter they may be placed on Stands in the dry Stove; but if in Summer they are plunged into the Tan-Bed, they will make great Progress, and their Leaves will be large, in which consists their greatest Beauty.

The 2d Sort was discovered growing naturally at *Campeachy*, from whence I received some dried Samples and Seeds: This hath very large oval Spear-shaped Leaves ending in Points, placed alternate on the Branches, and have several Ribs, which go-off from the Mid-rib alternate, rising upward to the Sides of the Leaves; and also a great Number of small Veins running horizontally between these Ribs. The Borders of the Leaves are fawed, and their under Sides of a shining brown Colour. The Branches are covered with a woolly Down, and the Flowers are produced in loose Spikes at the End of the Shoots; these are smaller than those of the former Sort, and are of a Rose Colour. This Tree rises to the Height of 20 Feet; it is propagated by Seeds which must be obtained from the Countries where the Trees naturally grow, for there can be little Hopes of obtaining any of the Seeds in Europe. The Plants are tender, so must be placed in the Tan Bed of the Bark Stove, otherwise they will not thrive in this Country; and they must be treated as is directed for other tender Plants from the same Countries.

CLUTIA. This Genus of Plants was constituted by the learned Dr. Boerhaave, in Honour of *Augerius Clute*, a curious Botanist.

The Characters are,

It is male and female in different Plants. The male Flowers have a large spreading Empalement, composed of 5 oval concave Leaves, they have 5 Heart-shaped Petals which are shorter than the Empalement and spread open. They have 5 exterior Nectariums situated in a Circle at the Bottom of the Petals; and 5 interior which are situated within the other, and have small Apices with a mellow Liquor. They have 5 Stamina situated in the Middle of the Style, which spread horizontally and are terminated by roundish Summits: These have no Germen, but a long truncated Style in the Middle of the Stamina. The female Flowers have permanent Empalements, and Petals like those of the male, these have 5 double exterior Nectariums, but no interior, they have a roundish Germen supporting three bifid reflexed Styles, the Length of the Petals, crowned by obtuse Stigmas; the Germen becomes a globular Capsule with six Furrows, and three Cells, each containing a single Seed.

The Species are,

1. *CLUTIA foliis sessilibus lanceolatis Hort. Cliff. 500.* *Clutia* with Spear-shaped Leaves sitting close to the Stalks. This is the *Alaternoides Africana telepii legitimi imperati foliis Hort. Amst. 2. p. 2.* African Bastard *Alaternus* with Leaves like the true *Orpine* of *Imperatus*.

2. *CLUTIA foliis ovatis integerrimis, floribus lateralibus. Lin. Sp. Plant. 1042.* *Clutia* with oval entire Leaves, and Flowers growing from the Sides of the Branches. This is the *Frutex Ethiopicus, portulaca folio, flore ex albo virescente. Hort. Amst. 1. p. 177.* Ethiopian Shrub with a Purslain Leaf and a greenish Flower inclining to white.

3 *CLUTIA foliis cordato lanceolatis. Flor. Zeyl.* *Clutia* with Heart-formed Spear-shaped Leaves. This is the *Ricinus dulcis arborescens Americanus, populnea fronde argentea. Pluk. Alm. 321.* Sweet Tree like American *Ricinus* with silvery Poplar Leaves.

4. *CLUTIA foliis lanceolatis acutis integerrimis petiolatis Lin. Sp. Plant. 1042.* *Clutia* with entire Spear-shaped pointed Leaves having Foot Stalks. This is the *Ricinioides Eleagni folio Catesb. Car. Vol. 2. p. 36.* Bastard *Ricinus* with a wild Olive Leaf.

The two first Sorts are Natives of *Africa*, from whence they were brought to some curious Gardens in *Holland*, and have since been communicated to most of the Botanical Gardens in *Europe*. The first Sort with female Flowers has been long an Inhabitant of some curious Gardens in *England*; but that with male Flowers I have lately received, with many other rare Plants, from Dr. Job Baster, F. R. S. of *Zirkzee* in *Holland*.

The second Sort has also been some Years in the *English* Gardens, and was ranged in the Genus of *Alaternoides*, under which Title it has been well figured by Dr. *Commelin* in the *Hortus Amstelodamensis*; but we have not the two Sorts of this in *England* at present. As far as I have been able to learn, that which is in the *English* Gardens is the female.

The 1st Sort rises with a shrubby Stalk 6 or 8 Feet high, putting out many Side Branches which grow erect, these are garnished with small Spear-shaped Leaves, placed alternate, sitting close to the Branches: They are of a grayish Colour and entire. The Flowers come out from the Joints, at the setting on of the Leaves; toward the upper Part of the Branches these are small and of a greenish white; they appear in June, July, and August, but being small make no great Appearance.

The 2d Sort rises about the same Height with the 1st, but hath a stronger Stem, the Branches are garnished with oval Leaves, which are much larger than those of the 1st Sort and they stand upon Foot Stalks which are an Inch long, these are of a Sea-green, and entire, the Flowers are like those of the 1st Sort in Shape and Colour; but those on the male Plants are smaller, and grow closer together than those of the female; but both are sustained upon short Foot Stalks. These Flowers appear at the same Time as those of the 1st Sort, and the Seeds ripen in Autumn. I have raised several of these Plants from Seeds, which have all proved female, the same as the parent Plant.

These Plants are easily propagated by Cuttings during any of the Summer Months: If the Cuttings are planted in small Pots, and plunged into a very moderate hot Bed, and shaded from the Heat of the Sun in the Middle of the Day,

Day, they will soon take Root, and should then be inured to the open Air, otherwise they will draw up very weak: And afterward these Plants may be each put into a separate small Pot, and placed in a sheltered Situation, where they may remain until the Middle of *October*, or later, if the Weather continues mild, when they should be removed into the Green-house, and placed where they may have the free Air in mild Weather; for they only require to be protected from Frost, therefore require no Warmth in Winter; but if the Green-house is shut up too close, or the Plants are much shaded by others, the tender Shoots are subject to grow mouldy, which destroys more of these Plants than the Cold: In Summer they must be placed abroad, in a sheltered Situation, with other hardy exotick Plants.

As these Plants are always green, they look well in the Green-house during the Winter-Season, and in Summer when they are placed in the open Air, with other exotick Plants, they make a pretty Variety.

The 3d Sort grows naturally in *India*. This rises with an upright shrubby Stalk, not more than 3 or 4 Feet in *England*; but in the Places where it grows naturally, it rises upward of 20 Feet high, and sends out many Branches at the Top, so as to form a large spreading Head: The Branches are garnished with Leaves, shaped like those of the black Poplar, which are of a lucid green, and are placed alternate standing upon tender Foot Stalks. As these Plants have not yet flowered in *England*, I can give no Account of them, but the Seed Vessels are very like those of the 2d Sort.

This Plant will live through the Winter in an airy Glass Case, without artificial Heat, but in that Situation, they should have very little water in winter; for the Plants abound with a milky Juice like the *Euphorbia*, so must at no Season of the Year have too much Wet. If these Plants, when young, are placed in a very moderate Warmth in Winter, it will greatly forward their Growth, but they must not have too much Heat, for that will force them too much; and when the Plants have obtained Strength, they may be treated more hardily. This Sort may be propagated by Cuttings during the Summer Season; but the Cuttings should be laid in a dry Place for a few Days, when they are taken from the old Plants; that their wounded Parts may dry and be healed over, before they are planted. These must be planted in small Pots, filled with light sandy Earth, and plunged into a moderate hot Bed of Tanners Bark; and if the Season is very warm, the Glasses should be shaded in the Heat of the Day, and raised up to admit fresh Air to the Cuttings every Day, these must be very sparingly watered, for much Wet will cause them to rot. When they have taken Root, and begin to shoot, they must have a greater Share of Air, and by Degrees inured to the open Air; when their Roots have filled the Pots, they should be carefully parted, and each planted in a separate Pot, of the same light sandy Earth; then they should be placed on the back Part of the Stove, behind the other Plants, where they may be screened from the Sun, till they have taken fresh Root, after which they may be brought forward and exposed gradually to the open Air. In the Summer they should have free Air constantly in warm Weather, but they must be screened from heavy Rain, and in Winter placed in an airy Glass Case, where

they may enjoy the Sun, and during that Season have very little Wet.

The 4th Sort grows naturally in the *Babama Island*, and also near the *Havanab*, from whence I received the Seeds. This rises about 12 or 14 Feet high, with several shrubby Stems, which divide into many Branches, garnished with narrow pale green Leaves, placed alternate, standing upon pretty long Foot Stalks; the Flowers come out in long loose Spikes from the Side of the Branches, these are white, with yellow Summits, and are succeeded by small round Capsules, having 3 Cells, in each of which is lodged a single black Seed. The Bark of this Tree, when burned, emits a fine Perfume; and if infused in Wine or Water, gives either a fine aromattick Bitter. This Plant may be propagated as the former, but requires a Stove to preserve it in Winter, and is very impatient of Moisture, so should have very little Water at that Season.

CLYPEOLA. *Lin. Gen. Plant.* 723. *Jontblaspi. Tourn. Inst. R. H. Tab.* 99. Treacle Mustard.

The Characters are,

The Flower hath a permanent Empalement, composed of four oblong oval Leaves. It hath four oblong entire Petals, placed in form of a Cross, and six Stamina which are shorter than the Petals, two of which standing opposite are shorter than the other, and are terminated by single Summits; in the Center is situated a roundish compressed Germen supporting a single Style, crowned by an obtuse Stigma. The Germen becomes an orbicular Pod, which is compressed, erect, and indented at the Top, with a longitudinal Fissure, opening in two Cells, containing round compressed Seeds.

The Species are,

1. CLYPEOLA *filiculis unilocularibus monospermis. Hort. Cliff.* 329. *Clypeola* with Pods, having but one Cell and a single Seed. This is the *Jontblaspi minimum spicatum lunatum. Col. Ecp.* 1. Least Buckler Mustard with spiked Flowers.

2. CLYPEOLA *filiculis bilocularibus tetraspermis. Hort. Cliff.* 329. *Clypeola* with Pods having two Cells and four Seeds. *Tblaspi Alysson dictum campestre majus. C. B. P.* 107. Greater Field Treacle Mustard called *Alysson*.

3. CLYPEOLA *annua filiculis bilocularibus dispermis, calycibus persistentibus. Sauv. Monsp.* 71. Annual *Clypeola* with Pods having two Cells and two Seeds, and a permanent Empalement. This is the *Tblaspi Alysson dictum campestre minus, C. B. P.* 107. Lesser Field Treacle Mustard called *Alysson*.

4. CLYPEOLA *perennis, filiculis bilocularibus ovatis dispermis. Sauv. Monsp.* 71. Perennial *Clypeola* with oval Pods having two Cells and two Seeds. This is the *Tblaspi Alysson dictum maritimum. C. B. P.* 107. Maritime Treacle Mustard called *Alysson*.

This Genus was named *Jontblaspi* by *Fabius Columna*, and continued by *Dr. Tournefort*, and other Writers on Botany before *Dr. Linnaeus*, who has altered the Name to *Clypeola*, the other Name being a Compound.

The 1st Sort is a low annual Plant, which seldom rises more than 4 Inches high, the slender Branches commonly lie prostrate on the Ground, which are produced on every Side the Root; these are garnished with small leaves, narrow at their Base, but are broader at their Ends, where they are obtuse. The Flowers are produced

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duced in short close Spikes at the Extremity of the Branches, which are small, yellow, and composed of 4 Leaves placed in form of a Cross; these are succeeded by orbicular compressed Seed Vessels, each having one Cell, containing a single Seed. It flowers in June and July, and the Seeds ripen in Autumn.

The 2d Sort rises with slender ligneous Stalks near 6 Inches high, which grow erect, and are garnished with small, oblong, hairy Leaves, placed alternate, standing close to the Stalks. The Flowers are produced in long Spikes at the End of the Branches, which are yellow, and shaped like those of the 1st Sort, but larger; these are succeeded by roundish flat Pods, having two Cells, each containing two Seeds. This flower and ripens its Seeds about the same Time as the former.

The 3d Sort hath several weak ligneous Stalks, about 4 Inches long, garnished with very narrow hoary Leaves, and are terminated by short Spikes of yellow Flowers, smaller than those of the last Sort; the Pods are also much less, and have two Cells, each containing a single Seed. This flower and seeds at the same Time.

The 4th Sort is perennial; this branches out from the Root into several slender Branches, which divide again into many smaller; these are garnished with very narrow hoary Leaves, sitting close to the Branches. The Flowers are produced in long Spikes at the End of the Branches; they are small, white, and shaped like those of the other Sorts, but the Spikes terminate in a roundish Bunch. This Plant rises a Foot and a Half high, spreading out on every Side. It flowers in June, and the Seeds ripen in Autumn.

The 3 Sorts first mentioned, are low annual Plants, which grow naturally in the South of France, in Spain, and Italy; these are preserved in Botanical Gardens for Variety, but have little Beauty; they are all of a hoary white, both Leaves and Stalks, which is much lighter in the warm Countries, than in England; these are propagated by Seeds, which should be sown upon a Border of light Earth, where they are to remain, and require no other Culture, but to thin them if they come up too close, and keep them clean from Weeds. The Seeds may be sown either in Spring, or Autumn; those which are sown in Autumn will grow much larger, and flower earlier than those which are sown in the Spring, and from them there will be a greater Certainty of having ripe Seeds. If the Seeds scatter, the Plants will come up, and, if kept clean from Weeds, they will thrive without farther Care.

The 4th Sort is a perennial Plant, so should be sown upon a warm Border, and on a dry Soil; this grows naturally on the Borders of the Sea, in the South of France and Italy, but when it is cultivated in a Garden, if the Soil is rich and moist, the Plants generally grow luxuriant in Summer, and are thereby too replete with Moisture, so that they are frequently killed by the Frost in Winter, but when they grow on a poor dry gravelly Soil, or on a Wall, their Stalks will be short, ligneous, and tough, so will endure the Cold of this Climate, and continue several Years; this is propagated by Seeds, which should be sown where the Plants are designed to remain; or if any of them are removed, it should be done when the Plants are young, for they do not bear transplanting well, when they are grown pretty large.

CNEORUM. Lin. Gen. Plant. 47. *Chamelæa*. Tourn. Inst. R. H. 651. Widow-wail, in French, *Camelée*.

The Characters are,

The Flower hath a small permanent Empalement, indented in three Parts. It hath 3 narrow oblong Petals, which are erect, and 3 Stamina, which are shorter than the Petals, terminated by small Summits. In the Center is situated an obtuse three-cornered Germen, supporting a firm erect Style, crowned by a trifid spreading Stigma. The Germen afterward becomes a globular dry Berry, with three Lobes, having 3 Cells, each containing one round Seed.

We have but one Species of this Genus, viz.

CNEORUM. Hort. Cliff. 18. Widow-wail. This is the *Chamelæa tricoccus*, of Dodonæus and Caspar Baubin.

This is an humble Shrub, which seldom rises more than two Feet and a Half high in this Country, but spreads out on every Side with many lateral Branches, so as to form a thick Bush. The Stems are ligneous, and almost as hard as those of the Box-Tree, and the Wood is of a pale yellow Colour under the Bark. The Branches are garnished with Leaves, which are stiff, of an oval Shape, about an Inch and a Half long, and a Quarter of an Inch broad, of a dark green Colour, having a strong Vein, or Rib, through the Middle. The Flowers are produced single from the Wings of the Leaves, toward the Extremity of the Branches, which are of a pale yellow Colour, composed of three Petals, which spread open, and a round Germen at the Bottom, having a single Style, which doth not rise above half the Length of the Stamina, which are Three in Number, standing erect, and are situated between the Petals. After the Flowers are fallen, the Germen becomes a Fruit, composed of three Seeds joined together as those of *Tithymalus*, or Spurge; these are first green, afterwards turn of a brown Colour, and when ripe are black. The Flowers begin to appear in May, and are succeeded by others during the Summer Months; and, when the Autumn proves favourable, these Shrubs will continue in flower till the End of October.

As this is a low ever-green Shrub, it may be very ornamental, if placed in the Front of Plantations of ever-green Trees and Shrubs; for as the Branches grow compact, and are well garnished with Leaves, it will hide the Ground between the taller Shrubs better than most other Plants; and, being durable will not want to be renewed; it rises better from scattered Seeds, than if sown with Care.

This was formerly preserved in Green-houses, and thought too tender to live in the open Air in England, but of late it has been planted in the full Ground, where it resists the Cold of our ordinary Winters very well, and is seldom injured but by extreme hard Frosts; nor do these kill the Plants which grow upon dry, rocky, or rubbishy Soils, where their Shoots are generally short and firm, but in a moist rich Ground, where the Shoots are more luxuriant, they are sometimes injured.

It is propagated by Seeds, sown in Autumn soon after they are ripe, and then the Plants will come up the following Spring; whereas those kept till Spring, remain a Year in the Ground, and often miscarry; they may be sown in a Bed of common Earth, covering them Half an Inch deep, and will require no other Care but to keep the Plants clear from Weeds the following Summer;

Summer; in the Autumn following they may be transplanted where they are to remain.

CNICUS. Lin. Gen. Pl. 833. Tourn. Blessed Thistle.

The Characters are,

The Empalement of the Flower is composed of many oval Scales; those toward the Top are terminated by branching Spines. The Flower is composed of several hermaphrodite Florets, which are uniform; these are Funnel-shaped, and cut at the Top into 5 equal Segments standing erect, each having 5 short hairy Stamina, terminated by cylindrical Summits. In the Center is situated a short Germen, crowned with Down, supporting a slender Style, terminated by an oblong Stigma. The Germen becomes a single Seed, crowned with Down, and shut up in the Empalement.

The Species are,

1. CNICUS caule diffuso, foliis dentato-sinuatis. Hort. Cliff. 395. Blessed Thistle with a diffused Stalk, and Leaves indented in Sinuses. This is the *Cnicus Sylvestris* *virgator*, *sive Carduus Benedictus*. C. B. P. 378. Hairy wild *Cnicus*, or Blessed Thistle.

2. CNICUS caule erecto, foliis inferioribus laciniatis, superioribus integris concavis. Hort. Cliff. 394. *Cnicus* with an upright Stalk, whose lower Leaves are lacinated, the upper entire and concave. This is the *Cnicus pratensis*, *Acanthi folio, flore flavescente*. Tourn. Meadow *Cnicus* with a Bears-breech Leaf, and yellowish Flowers.

3. CNICUS foliis amplexicaulibus, sinuato-pinnatis, spinosis, caule simplici, floribus sessilibus. Lin. Sp. Plant. 826. *Cnicus* with winged, sinuated, prickly Leaves, embracing the Stalk, which is single, and Flowers sitting close on the Top. This is the *Cirsium Alpinum spinosissimum, floribus ochro-leucis inter flavescentia folia congestis*. Haller. Tab. 20. Prickly Alpine *Cirsium* with Flowers of a yellow white, growing in Clusters between the Leaves, which are yellowish.

4. CNICUS foliis cordatis, petiolis crispis, spinosis, amplexicaulibus, floribus cernuis. Hort. Upsal. 251. *Cnicus* with Heart-shaped Leaves, having curled prickly Foot Stalks, which embrace the Stalks, and a nodding Flower.

The 1st Sort is the common *Carduus* which is used in Medicine; this is an annual Plant, which perishes soon after the Seeds are ripe. It grows naturally in Spain, and the Islands of the Archipelago, but is cultivated in Gardens in England to supply the Markets.

From the fibrous Root arises several redish hairy Stalks, about two Feet high, which divide upward into smaller Branches, and are garnished with long, hairy, green Leaves, cut in, or torn on both Sides into several Jags, each terminating into a soft harmless Spine. On the Top of the Stalks grow the Flowers in oval Heads; these are composed of several hermaphrodite Florets, of a pale yellow Colour, they are fistular, and cut at the Top into five Parts; these are included in a scaly Empalement, each Scale terminating in a long slender Spine, indented on both Sides like the Teeth of a saw; the Florets are succeeded by single, oblong, striated Seeds of a brown Colour, encompassed at the Top with a Crown of stiff Bristles, standing out like the Feathers of a Shuttletcock; the whole Plant is very bitter. It flowers in June, and the Seeds ripen in Autumn.

The Seeds of this Plant should be sown in Autumn on a Bed of common Earth, in a dry Part of the Garden, where the Plants will live through the Winter,

and in Spring they should be transplanted, placing them in Rows at a Foot or more distant, and nine Inches asunder in the Rows; if the Season proves dry, it will be necessary to water the Plants 2 or 3 Times, till they have taken Root, after which they will require no other Culture but to keep them clean from Weeds.

The Seeds may also be sown in Spring, and the Plants treated in the same Way, but these do not succeed so well as those sown in Autumn, nor do the Plants grow so large. The best Time to cut this Plant for Use, is when the Flowers are fully blown, before the lower Leaves decay; when it is cut, it should be spread in a dry shady Place for 3 or 4 Days, then tied up in Bunches, and hung up in a dry Room upon Strings in Rows, that the Air may pass freely between them, which will prevent their growing mouldy, or rotting.

The 2d Sort grows naturally in the northern Parts of Europe. Mr. Ray found it growing on the Rhine near Basl. This hath a perennial Root, which sends out many long jagged Leaves spreading on every Side near the Ground, so as to form a thick Bunch, these are jagged almost to the Mid-rib, in form of a winged Leaf. The Stalks are striated, smooth, and rise above 4 Feet high, dividing at the Top into smaller Branches: The Leaves, which grow upon the Stalks, are entire and Heart-shaped, they are sawed on their Edges, each Indenture ending in a weak Spine. These are concave, especially those near the Top, and half embrace the Stalks with their Base: The Stalks are terminated by large Heads of Flowers, growing in Clusters, they are of a whitish yellow Colour, and inclosed in a scaly Empalement. These are succeeded by small oblong Seeds, crowned with a bristly Down, it flowers in June, and the Seeds ripen in Autumn.

This Sort may be propagated by Seeds, or parting the Roots. The best Time to part the Roots is in Autumn, it delights in Shade, and requires no farther Care but to keep it clean from Weeds.

The 3d Sort grows naturally on the Alps, and on the Mountains of Austria; this rises near 4 Feet with an upright single Stalk, garnished with sinuated Leaves, which are very prickly, and embrace the Stalks with their Base; the Flowers are produced at the Top of the Stalk, surrounded by a Cluster of broad prickly Leaves, sitting close to the Stalk, these are of a whitish Yellow, and appear at the same Time with the former Sort. This is perennial and may be propagated as the former, it requires a moist Soil, and a shady Situation.

The 4th Sort grows naturally in Siberia, from whence the Seeds were sent to the Imperial Garden at Petersburg, where they succeeded, and produced Seeds, Part of which were sent me; this hath a perennial Root, composed of thick fleshy Fibres. The Leaves which rise immediately from the Root, are near a Foot long, and near six Inches broad in the Middle, diminishing toward each End, and at a little Distance from the Base are much contracted, but are wider at the End, these have scarce any Foot Stalks; they are of a deep green on their upper Side, but white on their under, and sharply sawed on their Edges. The Stalks rise more than 6 Feet high, sending out on each Side small Branches above a Foot long, the Stalks are striated, and of a redish Colour, they are garnished with Heart-shaped Leaves,

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Leaves, which almost embrace the Stalks with their Base, and are of the same Colour with those below; each Branch is terminated by one large globular Head of yellowish Flowers, included in a scaly Empalement, each Scale ending with a sharp Spine. This flowers in June, and the Seeds ripen in Autumn. It may be propagated as the two former Sorts, but requires a moist Soil, a shady Situation, and only to keep it clear from Weeds. The Inhabitants of Siberia eat the tender Stalks of this Plant, when boiled, instead of other Vegetables.

This is a perennial Plant, and may be propagated by parting the Roots; the best Time for doing this is in Autumn, that the Plants may get good Root in Winter; for those which are transplanted in Spring, do not flower well the first Year, unless they are planted in a moist Soil. As these Plants grow very large, so they are not proper Furniture for small Gardens, where they will take up too much Room, for they should not be planted nearer than 4 Feet from each other, or if they are too near any other Plants, they will rob them of their Nourishment; for the Roots of these extend to a great Distance; so that 2 or 3 of these Plants, for Variety, are sufficient for any Garden, which may be planted at a Distance from choicer Plants.

It is also propagated by Seeds, which may be sown in Spring on a Bed of common Earth, in the same Manner as the other Sorts, and only requires to be thinned, and kept clean from Weeds till Autumn, when they may be transplanted where they are designed to remain.

COA. See Hippocratea.

COAST-MARY. See Tanacetum.

COCCIGRIA. See Rhus.

COCCOLOBIS. Brown. *Hist. Jam.* 209. Guajabara. *Plum. Mss. Houst. Hort. Sicc.* The Sea-Side Grape; in French, Raisinier.

The Characters are,

The Flower has no Empalement; it has one permanent Petal which is cut into 5 Segments almost to the Bottom; it has a fleshy umbilical Nectarium which surrounds the Germen, and 6, 7, or more erect spreading Stamina, terminated by beaded Summits, and an oval Germen, supporting a short Style, crowned by a torn Stigma. The Germen afterwards turn to a fleshy Berry including an oval Nut, which is wrapped up in the Petal of the Flower.

The Species are,

1. COCCOLOBIS foliis crassiss orbiculatis, sinu aperto. *Hist. Jam.* 209. Sea-side Grape with round thick Leaves which are open at the Base. This is the Guajabara racemosa, foliis coriaceis subrotundis. *Plum. Mss.* Branching Guajabara, with roundish leathery Leaves, commonly called Sea-side Grape in the West-Indies.

2. COCCOLOBIS foliis cordato-oblongis, racemo terminatrice, caule arboreo. *Rurm.* The Sea-side Grape with oblong Heart-shaped Leaves, and a Tree-like Stalk, terminated by long Bunches of Fruit. This is the Guajabara alia racemosa, foliis oblongis. *Plum. Mss.* Another branching Guajabara with oblong Leaves.

3. COCCOLOBIS foliis cordato-ovatis, racemo terminatrice. Sea-side Grape with Heart-shaped oval Leaves, and the Branches terminated by long Bunches of Fruit. This is the Guajabara foliis minoribus & longioribus, fructu racemoso, minima atropurpurea. *Houst. Mss.* Sea-

side Grape with smaller and longer Leaves, and the least dark purple Fruit growing in long Bunches.

4. COCCOLOBIS foliis peltato-cordatis. Sea-side Grape with Target Heart-shaped Leaves.

5. COCCOLOBIS foliis lanceolatis venosis, uvis minoribus punctatis. Sea-side Grape with Spear-shaped veined Leaves, and small spotted Fruit. This is the Uvifera arbor Americana fructu punctato. *Pluk. Phyt. Tab.* 237. fig. 4. The chequered Grape.

6. COCCOLOBIS foliis ovato-lanceolatis acuminatis, caule arboreo. Mountain Grape with oval Spear-shaped Leaves ending in acute Points, and a Tree-like Stalk.

The 1st Sort grows naturally in most of the Islands in the West-Indies, on the sandy Sea Shores, from whence the Inhabitants have given it the Title of Sea-side or Mangrove Grape; this sends up several woody Stalks from the Root, which rise 8 or ten Feet high, with a light brown smooth Bark, and garnished with Leaves which are placed alternately; these are very thick and stiff, almost round; they are from 5 to 7 Inches Diameter, of a lucid green on their upper Side, and veined on their under, standing upon short Foot Stalks. The Flowers come out from the Wings of the Stalks; they are disposed along the Foot Stalk in long slender Bunches like those of the common Currant; these Bunches are 5 or 6 Inches long. The Flowers are white, and the Petal is cut into 6 Parts; these are succeeded by Berries about the Size of a common Grape, of a purplish red Colour, inclosing a Nut of the same Shape. The Fruit is eaten by the Inhabitants of the Islands in the West-Indies, being of a pleasant astringent Taste.

This Plant is figured by Lobel under the Title of Populus novi orbis, and had been copied by Parkinson in his Herbal, and several others; it is supposed his Figure was taken from a dried Specimen, which had been gathered after the Fruit was fallen off, so he took the Foot-Stalk upon which the Fruit had grown for a Katkin of a Poplar Tree.

The 2^d Sort grows naturally about Caribagena, and other Places in the West-Indies; this sends up many strong Stalks from the Root, which rise near 20 Feet high, and are covered with smooth gray Bark. The Leaves are from 7 to 9 Inches long, and from 3 to 4 broad; they are indented at the Foot Stalk like a Heart, but end in a Point, having several transverse Veins running alternately from the Midrib to the Border; they are of a thick stiff Consistence, and of a lucid green on their upper Side. The Flowers are produced in long slender Bunches at the End of the Branches; they are composed of 5 white acute-pointed Petals, spread open in Form of a Star; these are succeeded by roundish purple Fruit, smaller than the former Sort, and not so well flavoured.

The 3^d Sort was discovered by Dr. Housfoun, growing naturally at La Vera Cruz; this sends up many shrubby Stalks from the Root, which rise 5 or 6 Feet high, having a light gray Bark. The Leaves are oval and Heart-shaped, they are 3 Inches and a Half long, and 2 and a Half broad indented at their Foot Stalks; these are not so stiff as those of the 2 former Sorts. The Fruit is disposed in a slender Bunch at the End of the Branches; they are small, of a dark purple Colour, and are never eaten by the Inhabitants.

The 4th Sort was discovered by the same, growing naturally at *Campeachy*; this sends up many slender ligneous Stalks from the Root, which rise 7 or 8 Feet, covered with a gray Bark, and garnished with Heart-shaped Leaves about 4 Inches long and 3 broad, whose Foot Stalks are joined to the under Part of the Leaves, like the Handle of a Target. The Leaves are of a lucid green, and smooth on their upper Side; the Flowers and Fruit of this Sort I have not seen.

The 5th Sort grows naturally in *Jamaica*, from whence the late Dr. *Houfoun* sent me the Seeds; this sends up many slender ligneous Stalks from the Root, which rise 4 or 5 Feet high, covered with a brown Bark. The Leaves are 6 Inches long and 3 broad, having many strong Veins running from the Midrib toward the Border; they are of a light green Colour, and not stiff. The Fruit is small, of a purple Colour, growing in slender Bunches from the End of the Branches.

The 6th Sort grows naturally on the North Side of the Island of *Jamaica* on the Mountains, so is generally called there the Mountain Grape; this grows to a large Size, and is esteemed for its Wood, which is ranked among their best Sort of Timber. The Seeds were sent me by *William Williams*, Esq; of *St. Ann's* in *Jamaica*. The Trunk grows to the Size of a Man's Body; it rises to the Height of 30 Feet, sending out some side Branches, garnished with oval Spear-shaped Leaves, ending in acute Points, they are 6 Inches long, and 2 Inches and a Half broad toward their Base; of a bright green on their upper Side, but pale on their under, of a pretty thick Consistence, and stand on short Foot Stalks. The Fruit is produced on long slender Foot Stalks, of a purplish Colour, and near as large as those of the first Sort.

These Plants rise easily from Seeds, if they are sown in Pots, and plunged into a hot Bed of Tan; but, as they do not produce Fruit in *England*, the Seeds must be procured from the *West-Indies*. When the Plants are come up about 2 or 3 Inches high, they should be each transplanted into a small Pot, filled with light sandy Earth, and plunged in a fresh hot Bed of Tan, where they must be shaded from the Sun until they have taken new Root; after which they must be treated as the *Annona* and other tender Plants from hot Countries, giving them a proper Share of Air in warm Weather, and gently refreshing them with Water as they may require it; but they should not have too much Wet, for they do not perspire much, their Leaves being of a very close Contexture, especially those of the 1st and 2d Sorts. In Autumn they should be removed into the hot House, and plunged in the Bark Bed, otherwise they will not make great Progress; therefore they should always remain in the Tan Bed, giving them Plenty of Air in Summer, when the Weather is warm.

The Leaves of these Plants continue in Verdure all the Year, so make a fine Appearance in the hot House in Winter; but I have never seen the Flowers of either Sort produced here.

COCHLEARIA. *Lin. Gen. Plant.* 720. *Tourn. Inst.* Spoonwort, or Scurvy Grass, in *French*, *Herbe aux Cuis-liers*.

The Characters are,

The Empalement of the Flower is composed of four oval concave Leaves. The Flower hath four Petals, placed in

form of a Cross, which spread open, and are twice as large as the Leaves of the Empalement; it hath six Stamina, four of which are longer than the other two; these are terminated by obtuse compressed Summits. The Germen is Heart-shaped, supporting a short single Style, crowned by an obtuse Stigma; the Germen afterward become a gibbous, Heart-shaped, compressed Pod, fastened to the Style, having 2 Cells, in each of which are lodged 4 roundish Seeds.

The Species are,

1. **COCHLEARIA foliis radicalibus subrotundis, caulinis oblongis subsinuatis.** *Flor. Lapp.* 256. Scurvy Grass, whose lower Leaves are roundish, and those on the Stalks oblong and sinuated. This is the *Cochlearia folio subrotundo*. *C. B. P.* Round leaved Scurvy Grass.

2. **COCHLEARIA foliis radicalibus lanceolatis, integerrimis, caulinis sinuatis.** Scurvy Grass, whose lower Leaves are Spear-shaped and entire, and those on the Stalk sinuated. This is the *Cochlearia folio sinuato*. *C. B. P.* 110. Sea Scurvy Grass.

3. **COCHLEARIA foliis reniformibus, integris.** *Hort. Cliff.* 498. Scurvy Grass with Kidney-shaped Leaves, which are entire. This is the *Cochlearia minima ex montibus Wallie*. *Boerb. Ind.* Least Welch Scurvy Grass.

4. **COCHLEARIA foliis hastatis, angulatis.** *Flor. Sure.* 196. Scurvy Grass with angular Spear-shaped Leaves. *Cochlearia Armorica*. *Danish*, or Ivy-leaved Scurvy Grass.

5. **COCHLEARIA foliis radicalibus lanceolatis, crenatis, caulinis incis.** *Hort. Cliff.* 332. Scurvy Grass whose lower Leaves are Spear-shaped and crenated, and those on the Stalks jagged. This is the *Rapbanus Rusticanus*. *C. B. P.* 96. Horse Radish.

6. **COCHLEARIA altissima glastii folio.** *Inst. R. H.* 216. Tallest Scurvy Grass with a Woad Leaf.

The 1st Sort grows naturally on the Sea Shore in the North of *England*, and in *Holland*, but is cultivated for Use in the Gardens near *London*: This is an annual Plant, for the Seeds are sown, and the Plants decay within the Compass of one Year, but the Seeds should be sown early in Autumn; this hath a fibrous Root, from which arise many round succulent Leaves, which are hollowed like a Spoon; the Stalks rise from 6 Inches to a Foot high; these are brittle, and garnished with Leaves which are oblong and sinuated. The Flowers are produced in Clusters at the End of the Branches, consisting of 4 small white Petals, which are placed in form of a Cross; these are succeeded by short, roundish, swelling Seed Vessels, having 2 Cells, divided by a thin Partition, in each of these is lodged 4 or 5 roundish Seeds. It flowers in *April*, and the Seeds ripen in *June*, soon after which it decays.

This Sort is propagated in Gardens for medicinal Use, by sowing the Seeds in *July*, soon after they are ripe, in a moist shady Spot of Ground; and when the Plants come up, they should be thinned, so as to be left at about 4 Inches Distance each Way. The Plants that are taken out may be transplanted into other shady Borders, if you have Occasion for them; otherwise they may be hoed out (as is practised for Onions, Carrots, &c.); and at the same Time all the Weeds may be hoed down, so as to clear the Plants entirely from them, that they may have Room to grow strong. In Spring these Plants will be fit for Use; and those suffered to remain will run up to Seed in *May*, and perfect Seeds in *June*. If

If sown in Spring, the Seeds seldom grow well, therefore the best Time is soon after they are ripe; the Plants rarely live after producing Seeds, so should be sown every Year.

The Sea Scurvy Grafs is also used in Medicine; but this grows in the salt Marshes in *Kent* and *Essex*, where the salt Water overflows it almost every Tide; and can rarely be made to grow in Gardens, or at least to last longer there than one Year; but it being easily gathered in the Places beforementioned, the Markets are supplied from thence by the Herb Women, who make it their Business to gather Herbs.

This Sort differs from the first in the Shape of its Leaves; these being longer, and sinuated on their Edges. It flowers a little later in the Season; both these Sorts are used in Medicine.

The little *Waleb* Scurvy Grafs is a biennial Plant, and may be preserved in a Garden, if planted in a strong Soil, and a shady Situation. This is preserved in curious Gardens of Plants, but is not of any Use in Medicine, though it is by far the warmest and most pungent of all Sorts. This Plant grows plentifully in *Muscovy*, as also in *Davis's Straights*.

The 4th Sort is a low trailing Plant, whose Stalks grow six Inches long, and lie prostrate on the Ground; the Leaves are angular, and in Shape like those of Ivy. This is found growing naturally in some Parts of *England*, and is annual. It flowers and seeds about the same Time as the first Sort.

The 6th Sort is a biennial Plant, which usually grows about a Foot and a Half high, with upright Stalks, which are garnished with angular Heart-shaped Leaves embracing the Stalks with their Base; the Flowers are produced in loose Spikes at the End of the Branches, they are very small, white, and are succeeded by short swelling Pods filled with round Seeds. It flowers in *May*, and the Seeds ripen in *July* and *August*. This may be propagated by Seeds, as the common Sort: and if sown in Autumn, will more certainly succeed than in the Spring.

The Horse Radish is propagated by Cuttings or Buds from the Sides of the old Roots. The best Season for this Work is in *October* or *February*; the former for dry Lands, the latter for moist; the Ground should be trenched at least two Spits deep, or more if it will allow of it. The Manner of planting it is as follows: Provide yourself with a good Quantity of Offsets, which should have a Bud upon their Crowns; but it matters not how short they are; therefore the upper Part of the Roots which are taken up for Use, should be cut off about two Inches long with the Bud to it, which is esteemed the best for planting. Then make a Trench 10 Inches deep, in which you should place the Offsets at about 4 or 5 Inches Distance each Way, with the Bud upward, covering them up with the Mould that was taken out of the Trench: Then proceed to a second Trench in like Manner, and continue the same till the whole Spot is planted. After this, level the Surface of the Ground even, observing to keep it clear from Weeds, until the Plants are so far advanced, as to be strong enough to over-bear and keep them down. With this Management, the Roots of the Horse Radish will be long and strait, and free from small lateral Roots; and the 2d Year after planting will be fit for Use. 'Tis true,

they may be taken up the first Year; but then the Roots will be but slender; therefore it is the better way to let them remain until the second Year. The Ground in which this is planted ought to be very rich, otherwise the Roots will make but a small Progress.

COFFEA. *Lin. Gen. Plant.* 209. *Juss. Act. Reg. Scien.* 1713. *Jasminum. Com. Cat.* The Coffee-Tree.

The Characters are,

The Flower hath a small Empalement divided into four Parts sitting upon the Germen. The Flower hath one Petal which is Funnel-shaped, having a narrow cylindrical Tube, which is much longer than the Empalement, and is plain at the Top, where it is indented in five Parts; it hath five Stamina which are fastened to the Tube, and are terminated by long slender Summits. The roundish Germen supports a single Style, crowned by two thick reflexed Stigmas; the Germen becomes an oval Berry, containing two hemispherical Seeds, plain on one Side, and convex on the other.

We have but one Species of this Genus, viz.

COFFEA. *Hort. Cliff.* 59. The Coffee-Tree. This is the *Jasminum Arabicum Castaneaefolio, flore albo odoratissimo, cujus fructus Coffee in officinis dicuntur nobis.* Arabian Jasmine with a Chestnut Leaf, and a white very sweet Flower, whose Fruit is called Coffee.

This Tree is supposed to be a Native of *Arabia Felix*; where it was first cultivated for Use, and to this Day, is the Country from whence the best Coffee is brought to *Europe*; though the Plant is now propagated in many Parts of *America*, but the Produce of those Countries being greatly inferior to that of *Arabia*, hath occasioned its present Disrepute in *England*, so that it is scarce worth importing; but this might be remedied, if the Coffee Planters, in the *West-Indies*, could be prevailed on to try a few Experiments, which I shall hereafter propose, being founded on those which have been made in *England*, upon the Berries produced here. But I shall first treat of the Plant, with its Culture in *England*.

This is a low Tree in the native Country of its Growth, where it seldom rises more than 16 or 18 Feet high; but in *England*, I have not seen any above 10 or 12. The main Stem grows upright, and is covered with a light brown Bark, the Branches are produced horizontally and opposite by Pairs, which cross each other at every Joint, so that every Side of the Tree is fully garnished with them: The lower Branches being the longest, the others gradually decreasing to the Top, form a sort of Pyramid, the Leaves are also produced opposite by Pairs; these when fully grown, are about four Inches long, and one Inch and a Half broad in the Middle, decreasing toward each End; the Borders are waved, and the Surface is of a lucid Green. The Flowers are produced in Clusters, at the Base of the Leaves, sitting close to the Branches; these are tubulous, and spread open at Top, where they are divided into five Parts; they are of a pure white, and have a very grateful Odour, but are of short Duration. They are succeeded by oval Berries, which are first green, when fully grown, they turn red; and afterward change to black when fully ripe. These have a thin pulpy Skin, under which are two Seeds joined, these are flat on the joined Sides, with a longitudinal Furrow; and convex on their outer Side.

As the Coffee Tree is an Ever-green, it makes a beautiful Appearance at every Season in the Stove, but particularly

cularly when in flower, also when the Berries are red, which is generally in Winter; they continue a long Time in that State, therefore there is scarce any Plant, that more deserves a Place in the Stove than this.

It is propagated by the Berries, which must be sown soon after they are gathered from the Trees, for if they are kept a short Time they will not grow. I have frequently sent the Berries abroad by the Post, but when they have been a Fortnight in their Journey they have all failed, and this has constantly happened every where, for the Berries which were sent from *Holland* to *Paris* did not grow; nor did those which were sent from *Paris* to *England* grow: So that wherever these Trees are desired, the young Plants must be sent, if it be at any Distance from the Place where they grow.

The Berries should be planted in small Pots, filled with light Kitchen Garden Earth, and plunged into a hot Bed of Tanners Bark; these Pots must be watered gently once or twice a Week, but the Earth must not be too moist, lest it rot the Berries. If the Bed be of a proper Temperature of Warmth, the Plants will appear in a Month or five Weeks time; and in about three Weeks more will be fit to transplant. For as many of the Berries will produce two Plants, so the sooner they are parted, the better their Roots will be; for when they grow double till they have made large Roots, they will be so intermixed and entangled, as to render it difficult to separate them, without tearing off their Fibres, which will greatly prejudice the Plants. When these are transplanted, they must be each put into a separate small Pot, filled with the same Earth as before, and plunged into the Tan Bed again; which should be stirred up to the Bottom, and if required, some new Tan should be mixed with it, to renew the Heat. Then the Plants should be gently watered, and the Glasses of the hot Bed must be shaded every Day till they have taken new Root; after which the Plants should have fresh Air admitted to them every Day, in Proportion to the Warmth of the Season: During the Summer they will require frequently to be refreshed with Water; but they must not have it in too great Plenty: For if their Roots are kept too moist, they are very subject to rot, then the Leaves will soon decay and drop off, and the Plants become naked; when this happens, they are seldom recovered again. The first Sign of these Plants being disordered, is, their Leaves sweating out a clammy Juice, which attracts the small Insects, which frequently infest the Plants in Stoves, which are not in Health, and these cannot be destroyed, till the Plants are recovered to Vigour: For although the Plants are ever so carefully washed and cleaned from these Insects, yet they will be soon attacked by them again, if they are not recovered to Health, for these Insects are never seen upon any of the Plants while they are in perfect Vigour; so that upon the first Attack, the Plants should be shifted into fresh Earth, and all possible Care taken to recover them, without which all the washing and cleaning of the Plants will be to little Purpose. The Disorders attending the Coffee Trees, generally proceed from either being put into Pots too large for them, nothing being of worse Consequence than over potting them; or from the Earth being too stiff, or being over watered. If these are properly taken Care of, and the Stove kept always in a proper Temperature of

Heat, the Plants will thrive, and produce plenty of Fruit.

I have made Trial of several Compositions of Earth, for these Plants; but have found none of them equal to that of a Kitchen Garden, where the Soil is naturally loose, and not subject to bind; and if it has constantly been well wrought and properly dunged; this without any Mixture, is preferable to any other.

The Plants should not be too often transplanted, for that will greatly retard their Growth. If they are new potted twice a Year at most it will be sufficient; though unless the Plants make great Progress, they will not require to be removed oftener than once in a Year, which should be in Summer, that they may have Time to get good Roots again before Winter. During the warm Weather in Summer, these Plants should have a large Share of Air, but they must not be exposed abroad at any Season: For although they may have the Appearance of thriving in the open Air, during the Heat of Summer; yet when they are removed into the Stove again, their Leaves will fall off, and the Plants will make but an indifferent Appearance the following Winter, if they should survive it: Therefore it is the better Method to keep them constantly in the Stove, and admit a proportionable Share of Air to them every Day, according to the Heat of the Season; and they will require Water two or three Times a Week in warm Weather, but in Winter they must have it more sparingly; the Stove in which they are placed, should be kept to the Heat assigned for the *Ananas* upon the Botanical Thermometers.

There has been some of these Plants propagated by Cuttings, and also from Layers; but these are long before they make Roots, and the Plants so raised, are never so strong and thriving, as those which arise from Berries, therefore where the Berries can be procured, it is much the best Method to propagate the Plants by Seeds.

When they are transplanted, their Roots should not be too much cut or trimmed; the decayed or rotten Fibres should be pruned off, and those which are closely matted to the Side of the Pots should be trimmed, but not cut too near to the Stem, for the old Fibres do not put out new Roots very kindly, especially those which are become tough, so that there should always be a sufficient Number of young Fibres left to support the Plants, till new ones are produced.

The Coffee Plants were first carried from *Arabia* to *Batavia* by the *Dutch*; and from thence they were afterward brought to *Holland*, where great Numbers of the Plants were raised from the Berries which those Plants produced: And from these most of the Gardens in *Europe* have been furnished. A great Number of these young Plants, which were raised at *Amsterdam*, were sent to *Surinam* by the Proprietors of that *Island*; where the Trees were soon propagated in great Plenty. And from thence the Plants have been dispersed to most of the *Islands* in the *West Indies*: For as the Plants raised from the Berries, produce Fruit in eighteen Months from planting, in the warm Countries, so Plantations of these Trees may be soon made in any of those Countries, where the Temperature of the Air is proper for their Production; but the Trees will not grow in the open Air any where if there is a Winter: So that without the Tropicks, they cannot be expected to grow abroad.

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The *French* have made great Plantations of these Trees in their Settlements in the *West Indies*, and also in the Isle of *Bourbon*, from whence they import great Quantities of Coffee annually to *France*; which although greatly inferior in Quality to the *Arabian*, yet it is consumed, otherwise they would not continue that Branch of Commerce. In the *British Colonies of America*, there have been some large Plantations made of Coffee Trees: And it was proposed to the Parliament, some Years past, to give proper Encouragement, for cultivating this Commodity in *America*, so as to enable the Planters to undersell the Importers of Coffee from *Arabia*, accordingly there was an Abatement of the Duty payable on all the Coffee which should be of the Growth of our Colonies in *America*, which was at that Time supposed to be a sufficient Encouragement for the Planters to improve this Branch of Commerce: But the Productions of those Countries, being greatly inferior in Quality to that of *Arabia*, hath almost ruined the Project; and unless the Planters can be prevailed on to try some Experiments, to improve its Quality, there can be little Hope of its becoming a valuable Branch of Trade; therefore I shall beg leave to offer my Sentiments on this Article, and sincerely wish what I have to propose may be found useful for the Instruction of the Coffee Planters, for as my Opinion is founded upon Experiments, so it is not mere Theory or Supposition.

The great Fault of the Coffee which grows in *America*, is the Want of Flavour, or having a disagreeable one. The Berries are much larger than those which are imported from *Arabia*, and consequently have not so much Spirit or Flavour. This may be owing to several Causes, the first is that of its growing in a Soil too moist; which is always known to increase the Size of Fruit and Vegetables: But their Quality is greatly diminished thereby. The second is from gathering the Berries too soon; for I have been credibly informed, that it is the constant Practice of the Planters, to gather the Fruit when it is red: At which Time the Berries are much larger, and of greater Weight, than those which are permitted to ripen perfectly on the Trees, which is not till they are turned black, and their outer Pulp becomes dry, and the Skins shrink: Then the Berries are much smaller than before, and the outer Cover will easily separate from the Berry; which I have always been informed, has been the Complaint of the Planters, that this was with great Difficulty and Trouble effected. A third Cause I imagine may be in drying the Berries when gathered; which must be constantly attended to, for they cannot be too much exposed to the Sun and Air in the Day Time, but they must be every Evening removed under Cover, and carefully screened from Dews and Rain; nor should they be placed near any Sort of Liquid or Moisture, for the Berries are very subject to imbibe Moisture and thereby acquire the Flavour of the Liquid, or if it be pure Water, the Berries will be enlarged, and the Flavour diminished by it, as from many Experiments I can affirm: For a Bottle of Rum being placed in a Closet, in which a Canister of Coffee Berries closely stopped, was standing on a Shelf at a considerable Distance, in a few Days had so impregnated the Berries, as to render them very disagreeable, the same also has happened by a Bottle of Spirits of Wine standing in the same Closet with Coffee and

Tea, both which were in a few Days spoiled by it. Therefore from many Experiments of this Nature, which I have made with Coffee, it appears to me that it should never be brought over in Ships freighted with Rum, nor should the Berries be laid to dry in the Houses where the Sugars are boiled, or the Rum distilled. I have also been informed by a Gentleman who has a very good Estate in *Jamaica*, and who has lived many Years in that Island, that the Planters frequently boil the Coffee Berries before they are dried. As this Information comes from a Gentleman of great Skill and Veracity, I cannot doubt of the Fact, and if so, this alone is sufficient to spoil the best Coffee in the World; so that I am at a loss to guess the Reason for this Practice, which, appears to me, can only be intended to increase the Weight, therefore must be imputed to Avarice, the Bane of every publick Good.

There was some Time past an imperfect Account, printed in the Papers, of the Cause why the *American* Coffee was not so good as that which comes from *Arabia*, in which it is supposed that the Goodness of the latter proceeded from the Length of Time which the Berries had been kept: Therefore the Author proposes that the *American* Coffee Berries should be many Years kept, which he says will render them equally good. This is contrary to all the Experience I have had, or can learn, from those who have seen the whole Progress of Coffee in *Arabia*, with their Manner of drying and packing it to send abroad, for two Gentlemen who had lived there some Years assured me, that the Berries, when first gathered, were much better than those which are kept any Time. And a curious Gentleman who resided in *Barbadoes* two Years, also told me, that he never drank better Coffee in any Part of the World, than what he made from the fresh Berries, which he gathered himself, and roasted as he had Occasion for them, which is also confirmed by the Trials which have been made with the Berries which grow in the Stoves in *England*, which make a better flavoured Liquor, than the best *Arabian* Coffee Berries which can be procured in *England*; therefore I wish those who are inclinable to cultivate these Trees in *America*, would make Choice of a Soil rather dry than moist, in which the Trees will not make so great Progress, as those which grow in a wet Soil, nor will the Produce be so great; but as the Quality of the Produce, will be so much improved, it will certainly be of greater Advantage to them.

The next Thing is, to permit the Berries to remain on the Trees, till their Skins are shriveled and turned very black, which it is true will greatly diminish their Weight, but then the Commodity will be more than double the Value of that which is gathered sooner.

When the Berries are fully ripe, they should be gathered when they are perfectly dry, and spread abroad on Cloths in the Sun to dry, carrying them every Evening under Cover, to prevent the Dews from falling on them, or the Rain if any should happen: When perfectly dry, they should be carefully packed up in Cloths or Bags, three or four times double, and consequently kept in a dry Situation: And when they are shipped for *England*, it should be on board those Vessels which have no Rum, lest the Coffee should imbibe the Flavour; which cannot be prevented when stowed in the same Place. For some
Years

Years past, a Coffee Ship from *India*, had a few Bags of Pepper put on Board, the Flavour of which was imbibed by the Coffee, and the whole Cargo spoiled thereby.

As the Quantity of Coffee now consumed in *Britain* is very much increased of late Years; it will certainly be worthy of publick Consideration, how far it may be necessary to encourage the Growth of it in the *British* Colonies: And certainly it deserves the Attention of the Inhabitants of those Colonies, to improve this Commodity to the utmost of their Power; and not to have so much regard to the Quantity, as to the Quality of it; for although the former may appear to have the Advantage of the latter in Point of Profit; yet the Goodness of every Commodity, must always claim the Preference, and thereby will be found of more lasting Advantage, to the Cultivator.

COIX. *Lin. Gen. Plant.* 927. *Lacryma Jobi Tourn. Inst. R. H. Job's Tears, in French, Larmes de Job.*

The Characters are,

It hath male and female Flowers on the same Plant, the male Flowers are disposed in a loose Spike, the Chaff of these have two Valves, inclosing two Flowers, the Valves are oblong and bearded; the Petal has two oval Valves, the Length of the Chaff with narrow Beards: These have each three hairy Stamina, terminated by oblong four cornered Summits. There are a few female Flowers situated at the Base of the male Spike in the same Plant, these have bivalvular Chaff, the Valves are roundish, thick, and smooth; the Petal hath two oval Valves, the outer being larger and broadened at both Ends. They have a small oval Germen, supporting a short Style divided into two Parts, crowned by two horned Stigmas which are longer than the Flower, and covered with fine Hairs; the Germen afterward becomes a hard roundish smooth Seed.

The Species are,

1. COIX *feminibus ovatis. Hort. Cliff.* 434. Coix with oval Seeds. This is the *Lacryma Jobi Clus. Job's Tears.*

2. COIX *feminibus angulatis. Hort. Cliff.* 438. Coix with angular Seeds. This is the *Lacryma Jobi Americana altissima, Arundinis folio & facie. Plum.* Tallest American Job's Tears with the Leaf and Appearance of Reed.

The first Sort grows naturally in the Islands of the *Archipelago*, and is frequently cultivated in *Spain* and *Portugal*, where the poor Inhabitants grind the Grain to Flour in a Scarcity of Corn, and make a coarse Sort of Bread of it.

This is an annual Plant, which seldom ripens its Seeds in *England*, unless the Season proves very warm; from a thick fibrous Root is sent out 2 or 3 jointed Stalks, which rise near 3 Feet high, garnished with single, long narrow Leaves at each Joint, resembling those of the Reed; at the Base of the Leaves come out the Spikes of Flowers, standing on short Foot Stalks; these Spikes are composed of male Flowers only, and below them is situated one or two female Flowers; the male Flowers decay soon after they have shed their Farina; but the Germen of the female Flowers swell to a large oval Seed, which is hard, smooth, and of a gray Colour, greatly resembling the Seeds of *Gromwel*, from whence this Plant has been titled, *Litbospermum*.

Those who are desirous to cultivate this Plant in *England*, may procure the Seeds from *Portugal*, these should be sown on a moderate hot Bed in Spring, to bring

the Plants forward, and afterward transplant them on a warm Border, allowing each two Feet Room at least, and when the Plants have taken Root, they will require no farther Care, but to keep them clean from Weeds. These will flower about Midsummer, and in warm Seasons, the Seeds will ripen at *Michaelmas*. There is a Variety of this with much broader Leaves, which I received from *Smyrna* some Years past, which did not perfect Seeds here, so I cannot say if it is only a Variety, or a different Sort from this.

The 2d Sort will grow to the Height of 7 or 8 Feet; and the Stems become hard, like the Reed or *Indian Corn*: These branch out, and produce several Spikes of Flowers; but this Sort will not live in the open Air in *England*, therefore should be planted in the Bark Stove, where it will live through the Winter, and produce ripe Seeds the second Year; and may be continued longer, if desired.

COLCHICUM. *Lin. Gen. Plant.* 415. *Tourn. Inst. Meadow Saffron, in French Colchique.*

The Characters are,

The Flower hath neither Empalement or Spatba; it hath one Petal, rising with an angular Tube from the Root, and is divided at the Top into six oval concave Segments which are erect; it hath six Stamina which are shorter than the Petal, terminated by oblong Summits having four Valves. The Germen is situated in the Root, supporting three slender Styles the Length of the Stamina, crowned by reflexed channeled Stigmas; the Germen afterward becomes a Capsule with three Lobes, having a Seam on the Inside, dividing it into three Cells, which contain several roundish rough Seeds.

The Species are,

1. COLCHICUM *foliis planis lanceolatis, erectis. Hort. Cliff.* 140. Colchicum with plain, erect, Spear-shaped Leaves. This is the Common Meadow Saffron.

2. COLCHICUM *foliis linearibus, patentissimis. Lin. Laf. Sp. Plant.* 342. Meadow Saffron with very narrow, spreading Leaves. *Colchicum Montanum angustifolium. C. B. P.* 68. Narrow leaved Mountain Meadow Saffron.

3. COLCHICUM *foliis undulatis patentibus. Hort. Cliff.* 140. Meadow Saffron with waved, spreading Leaves. This is the *Colchicum Chiosense. Mor. Hist.* Meadow Saffron of *Chios* with chequered Flowers, like Fritillary, and waved Leaves.

4. COLCHICUM *floribus fritillariæ instar tessulatis, foliis planis. Mor. Hist.* Meadow Saffron with chequered Flowers, like Fritillary, and plain Leaves.

There is a great Variety of these which differ in the Colour of their Flowers, and other little Accidents, which are not lasting, so must not be ranged as distinct Species. But as many of them are cultivated in Flower Gardens, I shall mention those which I have seen cultivated. These are most of them feminal Variations from the first Sort.

The most common Meadow Saffron hath a purplish Flower.

The Meadow Saffron with white Flowers.

Meadow Saffron with striped Flowers.

Broad leaved Meadow Saffron.

Striped leaved Meadow Saffron.

Many flowered Meadow Saffron.

Meadow Saffron with double purplish Flowers.

Meadow Saffron with double white Flowers.

Meadow

Meadow Saffron with many white Flowers.

The 1st Sort grows naturally both in the *West* and *North of England*. I observed it in great Plenty in the Meadows in *Warwickshire* in the Beginning of *September*. The Country People call the Flowers Naked Ladies, because they come up naked, without any Leaves or Cover. This hath a bulbous Root, about the Size and Shape of Tulip Roots, but not so sharp-pointed at the Top, the Skin or Cover is also of a darker Colour. These Bulbs are renewed every Year, for that which produces the Flowers decays, and a new Root is formed above it. The Flowers come out in Autumn, these arise with long slender Tubes from the Root, about four Inches high, shaped like those of the Saffron but are larger; they are of a pale purple Colour, and divided into six Parts at the Top, which stand erect; the Number of Flowers is generally in Proportion to the Size of the Roots, from 2 to 7 or 8: In *March* the green Leaves appear, these are commonly four to a full grown Root; they are folded over each other below, but spread open above Ground, standing cross-ways: They are of a deep green, and when fully grown, are five or six Inches long, and one broad. The Seed Vessel comes out from between the Leaves, in *April*, and the Seeds ripen in *May*, soon after which the Leaves decay.

The other Varieties are supposed to have accidentally risen from the Seeds of this. So that those who are desirous to obtain a Variety of these Flowers, should propagate them from Seeds, by which Method there may be a greater Variety raised.

The 2d Sort grows naturally on the Mountains in *Spain* and *Portugal*. This hath a smaller Root than the first, and a darker Coat; the Flowers appear in *August* or *September*; these are cut into six long narrow Segments, of a redish purple Colour, having six yellow Stamina. The Leaves of this Sort come up soon after the Flowers decay, and continue green all the Winter, like the Saffron; these are long, narrow, and spread on the Ground; in *June* these decay like the first Sort.

The 3d and 4th Sorts grow naturally in the *Levant*, but are commonly cultivated in the *English* Gardens. These flower at the same Time as the 1st Sort, and the green Leaves come up in Spring. The Root of one of these Species is supposed to be the *Hermodactyl* of the Shops.

These are all very pretty Varieties for a Flower Garden, producing their Flowers in Autumn, when few other Plants are in Beauty: The green Leaves come up in Spring, which are extended to a great Length in *May*, then they begin to decay; soon after which Time, is the proper Season to transplant their Roots; for if they are suffered to remain in the Ground till *August*, they will send forth fresh Fibres; after which it will be too late to remove them. The Roots may be kept above Ground until the Beginning of *August*; at which Time, if they are not planted, they will produce their Flowers as they lie out of the Ground: But this will greatly weaken their Roots. The manner of planting their Roots being the same as Tulips, &c. I shall forbear mentioning it here, referring the Reader to that Article; and for sowing the Seeds, by which Means new Varieties may be obtained, I shall refer to the Article *Xiphion*; where you will find proper Directions.

COLD signifies something devoid of Heat, or which

does not contain in it any Particles of Fire; according to which Definition, Cold is a mere negative Term. And this is agreeable to the Sentiments of most of our modern Philosophers, who suppose Cold to consist in a mere Privation or Diminution of Heat.

Dr. *Clarke* takes Cold to be owing to certain nitrous and other saline Particles, endued with particular Figures proper to produce such Effects. Hence *Sal-Armoniac*, *Salt Petre*, *Salt of Urine*, and many other volatile and alkalizate Salts, mixed with Water, increase its Degree of Cold very sensibly.

Hence also comes that popular Observation, That Cold prevents Corruption; which, however, must not be admitted without an Exception; since if a hard porous Body have its Interstices filled with Water, and this be too much dilated by freezing, the including Body will be burst. And thus it is that Cold proves destructive to the Parts of some Plants: As it happened in the Winter, *Anno 1728*. In several Trees, whose Trunks were much exposed to the South-West, the Sap being thereby rarified by the Warmth of the Sun, which, for several Days, at the Beginning of the severe Frost, shone with an uncommon Heat, and the Nights coming on to extreme Cold, whereby the rarified Sap was so suddenly condensed, that the Sap Vessels could not contain it, and thereby burst off the Bark of many Trees almost from Top to Bottom; and this chiefly on the South-West Side of the Trees; as it did of two large Occidental Plane Trees in the Physick Garden at *Chelsea*; and several Pear, and other Fruit Trees, in the Nurseries of Mr. *Fran. Hunt* at *Putney*. And thus it is that great Quantities of Trees are rendered shaken, and the Timber when cut, of little Value; which is generally the Case in very severe Winters. In the hard Frost of the Year 1739-40, there was great Damage done to the Oak-Timber in most Parts of *England*, by the Frost penetrating to the Sap Vessels of the Trees; and by freezing the Sap, the Vessels could not contain it, but burst with great Noise; so that the Woods resounded with a Noise somewhat like the breaking down of the Branches of Trees when they are loping.

Dr. *Boerhaave* says, That there is no such Thing in all Nature as absolute Cold; that the most severe he had ever known, was in the Year 1728, that then the Water would freeze while it ran down his Hand; and yet even then the Cold was not so complete, but that he could make an artificial Cold greater by twelve Degrees.

Though much might be said as to the Effects of Cold on Plants, I shall only conclude with the Observation of the Rev. Dr. *Hales* who, in the Conclusion of his excellent Treatise of *Vegetable Statics*, says;

The considerable Quantity of Moisture, which is perspired from the Branches of Trees during the cold Winter Season, plainly shews the Reason why, in a long Season of cold North-easterly Winds, the Blossoms, and tender young-set Fruit and Leaves, are, in the early Spring, so frequently blasted, viz. by having the Moisture exhaled faster than can be supplied from the Trees; for, doubtless, Moisture rises slower from the Root, the colder the Season is, though it rises, in some Degree, all the Winter; as is evident, as he says, from his sixteenth Experiment in the said Book.

And from the same Cause it is, that the leafy Spires

of Corn are by these cold drying Winds often faded, and turned yellow; which makes the Husbandman, on these Occasions, wish for Snow: which, though it be very cold, yet it not only defends the Root from being frozen, but also screens the Corn from these drying Winds, and keeps it in a moist, florid, supple State.

It seems therefore to be a reasonable Direction, which some Authors who write on Agriculture and Gardening, give; viz. During these cold drying Winds, when little Dew falls, to water the Trees in dry Soils, in the blossoming Season, and while the young-set Fruit is tender; and provided there is no immediate Danger of a Frost, or in case of a continued Frost, to take care to cover the Trees well, and at the same time to sprinkle them with Water; which is imitating Nature's Method of watering every Part.

As to sloping Shelters over Wall Trees he says; I have often found, that when they are so broad, as to prevent any Rain or Dew coming at the Trees, they do more Harm than Good in these long easterly drying Winds; because they prevent the Rain and Dews falling on them; which would not only refresh and supple them, but also nourish them: but in case of sharp Frost after a Shower of Rain, these Shelters and other Fences must needs be of excellent Use to prevent the almost total Destruction occasioned by the Freezing of the tender Parts of Vegetables, when they are full-saturate with Moisture.

COLDENIA. *Lin. Gen. Plant.* 159. This Plant was so titled by Dr. *Linnaeus* in Honour of Dr. *Colden* of North America, a very curious Botanist, who has discovered several new Plants, not known before.

The Characters are,

The Empalement is composed of 4 erect Leaves, as long as the Petal. It hath a Funnel-shaped Flower of one Petal, spreading at the Top, and obtuse; it hath 4 Stamina, which are inserted in the Tube of the Petal, terminated by roundish Summits; in the Center is situated 4 oval Germen, each supporting a hairy Style the Length of the Stamina, crowned by permanent Stigmas. The Germen become oval compressed rough Fruit, terminated by 4 Beaks; inclosed by the Empalement, each of the Cells containing a single Seed, convex on one Side, and angular on the other.

We know but one Species of this Genus, viz.

COLDENIA. *Flor. Zeyl.* 69. By Dr. *Plukenet* titled, *Teucri-facie bisnagarica tetracoccus rostrata.* *Alm.* 363.

This is a Native of India, from whence the Seeds have been brought to some curious Botanick Gardens. It was sent me by Dr. *Linnaeus*, and is an annual Plant, whose Branches trail on the Ground, they extend about six Inches from the Root, and divide into many smaller Branches, garnished with short Leaves sitting close to the Branches, these are deeply crenated on their Edges, and have several deep Veins, they are of a glaucous Colour, and come out without Order. The Flowers are produced, at the Wings of the Leaves, growing in small Clusters; these have four Stamina, and but one Petal, which is Funnel-shaped and cut into four Segments at the Top; they are of a pale blue Colour and very small; when the Flower decays, the Germen becomes a Fruit composed of four Cells, wrapped up in the Empalement, each containing a single Seed.

This Plant is propagated by Seeds sown on a hot Bed in Spring; when the Plants are fit to remove, they

should be each put into a small Pot, and plunged into a hot Bed of Tanners Bark, observing to shade them till they have taken fresh Root, after which they should have Air admitted every Day in Proportion to the Warmth of the Season; and gently watered two or three Times a Week in warm Weather; but they must not have too much Moisture. These Plants must remain in the hot Bed, where they will flower in June, and the Seeds ripen in September.

COLEWORTS. See Brasica.

COLOCASIA. See Arum.

COLLINSONIA. *Lin. Gen. Plant.* 38. The Title was given to it by Dr. *Linnaeus*, in Honour of Mr. *Peter Collinson*, F. R. S. a distinguished Promoter of Botanical Studies, and the first who introduced this Plant among many others, to the English Gardens.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, cut into 5 equal Segments at the Top, the 3 upper being reflexed, and the 2 under erect. The Flower is Funnel-shaped, of one Petal which is unequal, and much longer than the Empalement; cut into 5 Parts at Top, the upper being short and obtuse, two of them being reflexed the lower Lip or Beard is longer, ending in many Points. It hath 2 long bristly erect Stamina, terminated by incumbent Summits; it hath a quadrifid obtuse Germen, with a large Gland, supporting a bristly Style the Length of the Stamina, crowned by a pointed bifid Stigma. The Germen becomes a single roundish Seed, situated in the Bottom of the Empalement.

We have but one Sort of this Plant, viz.

COLLINSONIA *foliis cordatis oppositis.* *Collinsonia* with Heart-shaped Leaves growing opposite.

This Plant was brought from Maryland, where it grows wild; it also grows in other Parts of North-America, by the Sides of Ditches, and in low moist Grounds, where it usually rises to the Height of 4 or 5 Feet; but in England it seldom grows above 3 Feet; and unless it be planted in a moist warm Situation, or in dry Weather is duly watered, it rarely flowers well; many People keep the Plants in large Pots, for the more convenient watering them: But these Plants seldom produce good Seeds; whereas those which are planted in the full Ground, and are constantly watered, will ripen Seeds very well in good Seasons.

This hath a perennial Root, and an annual Stalk, which decays in Autumn, and fresh Shoots come out in Spring. The Stalks are square and are garnished with Heart-shaped Leaves; placed opposite by Pairs, which are sawed on their Edges. The Flowers are produced at the Extremity of the Stalks, in loose Spikes, these have long Tubes, and are divided into five Parts at the Top, they are of a purplish yellow, and the lower Segment is terminated by long Hairs. The Flowers appear in July, and the Seeds ripen in Autumn.

This Plant may be easily propagated by parting the Roots in October. These should be planted at 3 Feet Distance; for their Roots require much Nourishment, otherwise they will not thrive. It will live in the open Ground, if planted in a sheltered Situation.

COLLOCOCCUS. *Brown. Hist. Jam.* 167. *Ceraso. affinis.* *Sloan. Hist.* 2. p. 95. The Clammy Cherry.

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The Flower has a small, Bell-shaped, permanent Empalement; it has one Petal, which is twice the Length of the Empalement, and is cut almost to the Bottom into 5 oval Segments; it has 5 hairy Stamina fastened to the Tube of the Empalement, situated between the Segments of the Petal, and terminated by Heart-shaped Summits; an oval Germen supporting a single Style, which divides into 4 Parts at the Top which spread asunder, and are crowned by oblong irregular Stigmas. The Germen afterwards becomes a roundish Berry full of a clammy Juice, inclosing a rugged Stone with two Lobes or Cells.

The Species are,

1. *COLLOCOCUS foliis oblongo-ovatis rugosis venosis, floribus laxè racemosis*. Brown. Hist. Jam. 167. Collococcus with oblong, oval, rough, veined Leaves, and Flowers growing in loose Bunches. This is the *Cerasa Americana, rugosis foliis, fructu viscoso*. Pluk. Tab. 158. f. 1. American Cherry, with rough Leaves, and a clammy Fruit, called Clammy Cherry.

2. *COLLOCOCUS platyphyllus major, racemis umbellatis*. Brown. Hist. Jam. 168. Greater Collococcus with broad Leaves, and branching Umbels. This is the *Prunus racemosa, foliis oblongis hirsutis maximis, fructu rubro*. Sloan. Cat. Jam. 184. The broad-leaved Cherry.

The 1st Sort grows naturally in Jamaica, and other Islands in the West-Indies, where it rises with a strait Trunk to the Height of 30 or 40 Feet, sending out Branches by Threes at each Division; they are covered with a dark gray Bark, and garnished with oblong Leaves which are rough and veined; they are 5 or 6 Inches long, and 2 and a Half broad, standing on short Foot Stalks. The Flowers are produced in loose Bunches at the Ends of the Branches; these are succeeded by spherical Berries of a scarlet Colour full of a clammy Juice, inclosing a rugged Stone.

The 2d Sort grows naturally in Jamaica, where it rises to the Height of 50 Feet. The Bark of the Stem is furrowed and gray; the Branches are crooked; the Leaves are a Foot and a Half long, and 8 or 9 Inches broad; they are rough and downy, and stand on short Foot Stalks. The Flowers are produced in loose Bunches at the End of the Branches, which are succeeded by oval Berries about the Size of small Cherries.

The 1st Sort has been several Years in the Gardens of the Curious, where it has risen to the Height of 10 or 12 Feet, but has not produced either Flowers or Fruit in England so far as I can learn. The 2d Sort is at present very rare in this Country.

They are propagated by Seeds, which must be procured from the West-Indies. These should be sown in Pots, and plunged in a hot Bed of Tan; when the Plants come up, they should be treated in the same Way as the *Malpighia*, with whose Culture these Plants will thrive very well, to which the Reader is desired to turn.

COLOCYNTHIS. See *Cucurbita*.

COLUMBINE. See *Aquilegia*.

COLUMNÆA. Plum. Nov. Gen. 28. Tab. 33. Lin. Gen. Plant. 710. The Title was given to it by Plumier, in Honour of Fabius Columna, a Nobleman of Rome, who has published two curious Books of Botany.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, cut into 5 Parts at the Top; it hath one Petal, of the (rin-

gent) or grining Kind, having a long swelling Tube, divided above into two Lips, the upper being erect, concave, and intire, the lower is divided into 3 Parts which spread open: It hath 4 Stamina, two being longer than the other; these are inclosed in the upper Lip, and are terminated by single Summits. In the Center is situated the roundish Germen, supporting a slender Style, crowned by a bifid acute Stigma. The Germen becomes a globular Berry with two Cells, sitting on the Empalement, and is of the same Magnitude, containing several oblong Seeds.

There is but one Species of this Genus known, viz.

COLUMNÆA. Lin. Sp. Plant. 638. This is the *Columnæa scandens, phœniceo flore, fructu albo* Plum. Nov. Gen. 28. Climbing Columnæa with a scarlet Flower, and a white Fruit. Plumier mentions a Variety, with a yellowish Flower and white Fruit. But this is only a Variation supposed to have risen from the Seeds of the first.

I received Seeds of the 1st Sort from Carthage in New Spain, where the Plants grew naturally. This hath a climbing Stalk, which fastens to the neighbouring Plants whereby it is supported. The Leaves are oval, sawed on the Edges, and stand on short Foot Stalks, these and also the Stalks are very hairy; but the Plants decayed the following Year, before they produced any Flowers, so I can give no Description of them.

These Plants are Natives of the warmest Parts of America; so are too tender to live in England, unless preserved in the Stove. They are propagated by Seeds, which must be sown in a good hot Bed; when the Plants come up, they must be treated as other tender exotics, which are kept in the Bark Stove.

COLUTEA. Tourn. Inst. R. H. 649. Lin. Gen. Plant. 776. Bladder Sena, in French, *Baguenaudier*.

The Characters are,

The Flower hath a Bell-shaped permanent Empalement of one Leaf, indented in 5 Parts. The Flower is of the Butterfly Kind. The Standard, Wings, and Keel, vary in their Figure in different Species. It hath 10 Stamina, 9 of which are joined, and the other stands separate, which are terminated by single Summits. In the Center is situated an oblong compressed Germen, supporting a rising Style, crowned by a bearded Line, extended from the Middle of the upper Part of the Style. The Germen becomes abroad swollen Pod with one Cell, including several Kidney-shaped Seeds.

The Species are,

1. *COLUTEA arborea, foliolis obcordatis*. H. C. Tree Bladder Sena with the smaller Leaves Heart-shaped. *Colutea vesicaria*. C. B. P. Common Bladder Sena.

2. *COLUTEA foliolis ovatis integerrimis, caule fruticoso*. Shrubby Bladder Sena with oval entire Leaves.

3. *COLUTEA foliolis cordatis minoribus, caule fruticoso*. Bladder Sena with smaller Heart-shaped Leaves, and a shrubby Stalk. This is the *Colutea Orientalis flore sanguinei coloris, lutea macula notata*. Tourn. Eastern Bladder Sena with a Blood-coloured Flower, spotted with yellow.

4. *COLUTEA foliolis ovato-oblongis*. Hort. Cliff. 368. Shrubby Bladder Sena with oblong oval Leaves. This is the *Colutea Æthiopica flore phœniceo, folio Barbæ Jovis*. Breyn. Cent. 1. 73. Æthiopian Bladder Sena with a scarlet Flower, and a Jupiter's Beard Leaf.

5. *COLUTEA foliolis ovatis, emarginatis, leguminibus oblongis compressis acuminatis, caule arborco*. Bladder Sena with

with oval Leaves indented at the Top, oblong, compressed, pointed Pods, and a Tree-like Stalk. Dr. Plukenet titles it *Colutea Vera Crucis vesicaria*. Alm. 111. Pl. 165. f. 3. Bladder Sena of *Vera Cruz*.

6. *COLUTEA herbacea foliis linearibus*. Hort. Up. 266. Herbaceous Bladder Sena with narrow Leaves. This is the *Colutea Africana annua, foliolis parvis, mucronatis, vesiculis compressis*. Hort. Amst. African annual Bladder Sena with small pointed Leaves, and compressed Pods.

7. *COLUTEA caulis procumbentibus, foliolis ovato-linearibus, tomentosis, floribus alaribus pedunculis longissimis*. Bladder Sena with trailing Stalks; oval narrow Leaves, which are woolly, and Flowers growing from the Sides of the Stalks with very long Foot Stalks.

The 1st Sort is commonly cultivated in the Nursery Gardens, as a flowering Shrub, to adorn Plantations. This grows naturally in *Austria*, the South of *France* and *Italy*, from whence the Seeds were originally brought to *England*; this hath several woody Stems, which grow to the Height of 12 or 14 Feet, sending out many woody Branches, garnished with winged Leaves, composed of 4 or 5 Pair of oval Leaves placed opposite, and terminated by an odd one; these are indented at the Top, and of a grayish Colour. The Flowers come out from the Wings of the Leaves upon slender Foot Stalks, about two Inches long, each sustaining two or three Flowers of the Butterfly Kind, whose Standard is reflexed and large. The Flowers are yellow, with a dark-coloured Mark on each Petal; these are succeeded by inflated Pods, an Inch and a Half long, having a Seam on the upper Side, containing a single Row of Kidney-shaped Seeds, fastened to a Placenta. It flowers in *June* and *July*, and the Seeds ripen in Autumn. There is a Variety with reddish Pods, which is equally common in the Gardens, and is supposed to be only accidental, for the Plants do not differ in any other Part.

The Seeds of the 2d Sort were brought from the *Levant* by the Reverend Dr. Pocock, which succeeded in the Garden at *Chelsea*, and since Dr. Russel, who resided many Years at *Aleppo*, brought over dried Samples of this Sort, which he assures me grow common near that City. This seldom grows more than 6 or 7 Feet high; the Branches are very slender, and spread out on every Side; these are garnished with winged Leaves, composed of 9 Pair of small, oval, entire Lobes, terminated by an odd one; the Flowers stand upon slender Foot Stalks about the same Length of the former. The Flowers are also like those, but are of a brighter yellow. This Sort begins to flower early in *May*, and continues flowering till the Middle of *October*.

The 3d Sort was discovered by Dr. Tournefort in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and since have been communicated to most of the curious Gardens in *Europe*. This hath a woody Stem, which sends out many Branches on every Side, and rises about 7 or 8 Feet; these are not so strong as those of the first Sort, and are garnished with winged Leaves, composed of 5 or 6 Pair of small Heart-shaped Lobes, terminated by an odd one. The Flowers proceed from the Side of the Branches, standing on Foot Stalks, each sustaining 2 or 3 Flowers, shaped like those of the first Sort, but smaller; they are of a dark red Colour, marked with yellow, and appear in *June*; the Seeds ripen in Autumn.

The 4th Sort grows naturally in *Aethiopia*. This hath a weak shrubby Stalk, which sends out many Side Branches growing erect, and garnished with equal winged Leaves, composed of 10 or 12 Pair of small, oval, oblong, hoary Lobes. The Flowers are produced at the upper Part of the Branches, from the Wings of the Leaves, each Foot Stalk sustaining 3 or 4 scarlet Flowers, longer than those of the other Sorts, but not reflexed; these are succeeded by inflated Pods, containing one Row of Kidney-shaped Seeds. The usual Time of its Flowering is in *June*, but when the Seeds are sown early in the Spring, the Plants frequently flower the following Autumn.

The 5th Sort was sent me from *La Vera Cruz*, in *New Spain*, in 1730. This hath a shrubby Stalk, which rises to the Height of 12 or 14 Feet, sending out many Branches, garnished with winged Leaves, composed of three Pair of oval Lobes, terminated by an odd one; these are indented at the Top, and of a light green. The Flowers are of a bright yellow, and stand two or three upon each Foot Stalk; these are succeeded by compressed Pods near four Inches long, which end in long Points.

The 6th Sort grows naturally at the *Cape of Good Hope*. This is an annual of little Beauty, so is rarely cultivated but in Botanick Gardens for Variety. This rises with a slender herbaceous Stalk about a Foot high, dividing upward into three or four Branches, garnished with winged Leaves, composed of 5 or 6 Pair of very narrow Lobes, near an Inch long, which are a little hoary. The Flowers are small, of a purplish Colour, standing 3 together on slender Foot Stalks, and succeeded by flat oval Pods, each containing 2 or 3 Kidney-shaped Seeds. It flowers in *July*, the Seeds ripen in Autumn, and the Plant decays soon after.

The Seeds of the 7th Sort were sent me from the *Cape of Good Hope*, in 1753, which have succeeded in the Garden at *Chelsea*. This Plant hath many slender herbaceous Stalks, which trail on the Ground, and are divided into many smaller Branches, garnished with winged Leaves, composed of 12 or 14 Pair of small, narrow, oval Lobes, terminated by an odd one; these, and also the Stalks, are covered with a whitish Down. The Flowers are very small, of a purple Colour, and stand upon very long slender Foot Stalks, each sustaining 3 or 4 Flowers; these are succeeded by compressed Pods little more than Half an Inch long, which are a little bent like a Sickle, each containing a single Row of small Kidney-shaped Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn. This is a perennial Plant, which, if sheltered in Winter, will continue several Years, but the Branches do not extend more than a Foot in Length, and unless they are supported, always trail upon the Ground.

The three first mentioned Sorts are very hardy Shrubs, which thrive in the open Air extremely well, so are generally propagated for Sale in the Nursery Gardens, but the 1st Sort hath been long in *England*, so is more generally known and propagated, than either of the others, which have been but few Years in the *English* Gardens. The 3d Sort is not mentioned in any of the Botanick Books, but as the Seeds ripen here very well, in a few Years it may be in as great Plenty as the first Sort.

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Time in Spring, in a Bed of common Earth; and when the Plants come up, they must be kept clear from Weeds; the *Michaelmas* following they should be transplanted either into Nursery Rows, or in Places where they are designed to remain; for if they are let grow in the Seed Bed too long, they are very subject to have downright Tap Roots, which renders them unfit for Transplantation; nor should they be suffered to remain too long in the Nursery before they are transplanted, for the same Reason.

The 1st Sort is very proper to intermix with Trees of a middling Growth in Wilderness Quarters, or in Clumps of flowering Trees, where the Oddness of their Flowers and Pods will make a pretty Variety, especially as they continue a long Time in flower; for they usually begin flowering by the End of May, and from that Time to September, are seldom destitute of Flowers.

These Trees make great Shoots annually, which are frequently broken down by strong Winds in Summer, so that if not sheltered by other Trees, their Branches should be supported, otherwise they will be broken, and split off, whereby the Trees will be rendered unsightly.

The 3d Sort does not grow so tall as the common, but makes a more regular Shrub. The Flowers are of a dusky red Colour, spotted with yellow, so it makes a very pretty Variety, and being as hardy as the common Sort, may be propagated by Seeds in the same Manner.

The 4th Sort is tender, so will not bear severe Winters in the open Air in England; but, in mild Winters, if planted in a dry Soil, and warm Situation, they will thrive very well; and those Plants which live abroad, will flower much stronger, and make a finer Appearance, than those which are preserved in the Green-house, for these Plants require a large Share of Air, otherwise they are apt to draw up weak, so seldom produce their Flowers in Plenty; therefore when any of the Plants are sheltered in Winter, they must be placed as near the Windows as possible, that they may have all the Advantages of Air; and in Spring they must be hardened to bear the open Air as soon as possible.

This Sort is propagated by Seeds as the former; if they are sown early in Spring, upon a warm Border of light Earth, the Plants will flower in August; and, if the Autumn proves favourable, will ripen their Seeds very well; but some sow the Seeds upon a moderate hot Bed in Spring, whereby they bring the Plants so forward as to flower in July, and the Seeds are always perfected from these Plants; but they should always be transplanted while young, for they do not bear removing well when they are large. This Sort will sometimes live in the open Air for 3 or 4 Years, when they stand in a well sheltered Situation; and these will grow to have large Heads, and make a fine Appearance when in flower; they will also continue much longer in Beauty than those which are treated more tenderly.

The 5th Sort grows naturally in a warm Country, so is too tender to thrive here in the open Air, this is propagated by Seeds, which must be sown on a hot Bed in Spring, and when the Plants are 2 Inches high, they should be each transplanted into a small Pot, filled with light Earth, and then plunged into a hot Bed of Tanners Bark, observing to shade them till they have taken fresh Root, after which they must be treated as

other Plants from the same Climate, always keeping them in a Stove of a moderate Temperature of Heat.

The 6th Sort is a low annual Plant, seldom growing more than 18 Inches high; the Flowers being small, and having little Beauty, it is seldom preserved but in Botanical Gardens; the Seeds of this must be sown upon a moderate hot Bed in Spring; and the Plants put into small Pots, and brought forward in another hot Bed; in July they will flower, when they may be exposed to the open Air, in a warm Situation, where the Seeds will ripen in September, and the Plants soon after decay.

The 7th Sort may be raised on a moderate hot Bed in Spring, and afterward exposed to the open Air in Summer, but in Winter they must be sheltered under a Frame, otherwise the Frost will destroy them.

COLUTEA SCORPIOIDES. See Emerus.

COLLIFLOWER. See Brassica.

COMA AUREA. See Chrysocoma.

COMARUM. Lin. Gen. Plant. 563. *Pentaphylloides.* Tourn. Inst. R. H. 298. Marsh Cinquefoil.

The Characters are,

The Flower hath a large spreading Empalement of one Leaf, divided into 10 Parts at the Top, which is coloured. It hath five oblong Petals, which are inserted in the Empalement, but are much smaller. It hath 20 permanent Stamina, which are inserted into the Empalement, and are terminated by Moon-shaped Summits. It hath a great Number of small roundish Germen collected into a Head, having short single Styles arising from their Sides, which are crowned by single Stigmas. The common Receptacle becomes a large fleshy Fruit, having many pointed Seeds adhering to it.

We know but one distinct Species of this Genus, viz.

COMARUM. Fl. Lapp. 214. This is the *Pentaphylloides palustre rubrum.* Inst. R. H. 298. Red Marsh Bastard Cinquefoil, and the *Quinquefolium palustre rubrum.* C. B. P. 326. Red Marsh Cinquefoil.

There is a Variety of this, which grows plentifully in Ireland, and also in the North of England, from whence I have procured many of the Plants, which after one Year's Growth in the Garden, have been so like the common Sort, as not to be distinguished from it, so that the different Appearance which it has in the Places where it grows naturally, may be supposed to arise from the Soil and Situation. This is by Dr. Plukenet, titled *Pentaphyllum palustre rubrum, crassius & villosius foliis Succicum, & Hibernicum.* Alm. 284. Red Marsh Cinquefoil of Sweden and Ireland, with thick and hairy Leaves.

This Plant hath creeping woody Roots, which send out many black Fibres, penetrating deep into the Ground, from which arise many redish Stalks, about two Feet high, which generally incline to the Ground; these are garnished at each Joint with one winged Leaf, composed of 5, 6, or 7 Lobes, which rise above each other, the Middle being the largest; the lower diminishing, and with their Base embrace the Stalks; these are deeply sawed on their Edges, smooth above, of a light green, and hoary on their under Side. The Flowers are produced at the Top of the Stalks, 3 or 4 together on short Foot Stalks; these have a large spreading Empalement, which is red on the upper Side, and divided at the Top into 10 Parts; in the Center sits the five Petals, which are red, and not more than a 3d Part the Size of the Empale-

ment; within these are situated many Germen, attended by about 20 Stamina, terminated by dark Summits. After the Flower is past, the Receptacle which sits in the Bottom of the Empalement, becomes a fleshy Fruit, somewhat like a Strawberry, but flatter, including a great Number of pointed Seeds. It flowers in July, and the Seeds ripen in Autumn.

As these Plants are Natives of Bogs, they are with Difficulty preserved in Gardens, for they must be planted in a Soil as near to that of their natural Growth as possible, they are very apt to spread much at the Root, when in a proper Situation; so whoever is inclinable to preserve these Plants, may remove them from the Places of their Growth in October; and if they are planted on a Bog, there will be no Danger of succeeding. There are a few of these now growing upon a Bog at Hampstead, which were planted there some Years ago; but the nearest Place to London, where they grow wild in Plenty, is in the Meadows near Guilford in Surry.

COMMELINA. Lin. Gen. Plant. 58. Plum. Nov. Gen. 48. Tab. 38. *Zanonia*. Plum. Nov. Gen. 38. Tab. 38. This Plant was so called by Father Plumier, from Dr. Commeline, a famous Professor of Botany at Amsterdam.

The Characters are,

It hath a permanent Spatha, which is large, Heart-shaped, compressed, and shut together. The Flower hath 6 concave Petals, 3 or 4 of which are small and oval, (these are frequently taken for the Empalement) the others are large, roundish, and coloured. It hath 3 Nectariums, (which have been supposed to be Stamina); these have proper Stamina, which sit horizontal, and are shaped like a Cross. There are 3 Awl-shaped Stamina, which recline, and sit about those of the Nectarium, which are terminated by oval Summits. In the Center is situated a roundish Germen, supporting a twining Style, crowned by a single Stigma. The Germen becomes a naked globular Capsule, with 3 Furrows, having 3 Cells, each containing 2 angular Seeds.

The Species are,

1. COMMELINA corollis inaequalibus, foliis ovato-lanceolatis, acutis, caule procumbente, glabro. Hort. Upsal. 18. *Commelina* with unequal Petals, oval, Spear-shaped, pointed Leaves, and a smooth trailing Stalk. This is the *Commelina procumbens annua, saponaria folio*. Hort. Elth. Annual trailing *Commelina* with a Sopewort Leaf.

2. COMMELINA corollis inaequalibus, foliis ovato-lanceolatis, caule erecto, scabro, simplicissimo. Hort. Upsal. 18. *Commelina* with unequal Petals, oval Spear-shaped Leaves, with a single, upright, rough Stalk. This is the *Commelina erecta, ampliora subcaeruleo flore*. Hort. Elth. 94. Upright *Commelina* with a larger bluish Flower.

3. COMMELINA corollis inaequalibus, foliis laccolatis, glabris, obtusis, caule repente. Lin. Sp. Plant. 41. *Commelina* with unequal Petals, smooth, Spear-shaped, obtuse Leaves, and a creeping Stalk. This is the *Commelina procumbens, flore luteo*. Prod. Leyd. 538. Trailing *Commelina* with a yellow Flower.

4. COMMELINA corollis equalibus, foliis ovato-lanceolatis, subciliatis. Hort. Upsal. 18. *Commelina* with equal Petals and oval Spear-shaped Leaves, hairy on their under Side. This is the *Commelina radice anacampserotidis*. Hort. Elth. 94. *Commelina* with a Root like Orpine.

5. COMMELINA corollis equalibus pedunculis incrassatis, foliis lineari-lanceolatis. Lin. Sp. Pl. 41. *Commelina* with equal Petals, thick Foot Stalks, and narrow Spear-

shaped Leaves. This is the *Zanonia graminea perfoliata*. Plum. Perfoliate *Zanonia* with Grass Leaves.

There are some others of this Genus, but those here enumerated, are all I have seen in England.

The 1st Sort grows naturally in the Islands in the West-Indies, and in Africa; this is an annual Plant, which hath several trailing Stalks, near 2 Feet long, these put out Roots at the Joints, which strike into the Ground; at each Joint is placed one oval, Spear-shaped Leaf, ending in a Point, which embraces the Stalk with its Base, and hath several longitudinal Veins: They are of a deep green, and smooth. The Flowers come out from the Bosom of the Leaves, included in a Spatha, which is compressed and shut up, each having 2 or 3 Flowers, standing upon short Foot Stalks, they are composed of 2 large blue Petals, and 4 smaller green ones, which have generally been termed the Empalement of the Flower; within these are situated 3 Nectariums, each having a slender Stamina fixed on the Side, these surround the Germen, which becomes a roundish Capsule having 3 Cells, in each of these is lodged two angular Seeds. It flowers in June and July, and the Seeds ripen in Autumn. This was titled, *Ephemerone flore dipetalo*, by some of the older Writers in Botany.

The 2d Sort grows naturally in Pennsylvania, from whence I received the Seed; this hath a perennial Root composed of many white Fibres, the Stalks rise 18 Inches high, are upright, rough, herbaceous, and about the Size of Quills, these have a single Leaf at each Joint, which are shaped like those of the first Sort, and embrace the Stalks with their Base, the Flowers come out from the Bosom of the Leaves at the upper Part of the Stalk, sitting upon short Foot Stalks; these are of a pale bluish Colour, and are succeeded by Seeds as the first Sort. This flowers about the same Time with the first, but the Seeds do not often ripen in England.

The 3d Sort grows naturally in Africa; this hath a fibrous Root, which sends out many trailing Stalks 3 Feet long, these send out Roots at every Joint, and from them many more Shoots are produced, so that where the Plants are in a proper Degree of Warmth, and have Room to spread, they will cover a large Surface of Ground. The Leaves are very like those of the first; but the Flowers are larger and of a deep yellow; the Petals are Heart-shaped, and the Seed Vessels are larger. This flowers in July, and the Seeds ripen in Autumn.

The 4th Sort grows naturally near old Vera Cruz in New Spain, from whence the Seeds were sent me. This hath a thick fleshy Root composed of several Tubes, somewhat like those of the Ranunculus, several joining together at the Top, where they form a Head, and diminish gradually downward; from this arise one or two inclining Stalks, which send out Side Branches, from their lower Parts; these are garnished with oval, Spear-shaped Leaves, Part of which have long Foot Stalks, the others embrace the Stalks with their Base, they have short Hairs on their under Side, and toward the Stalk, but are smooth above, of a deep green Colour, and close every Evening, or in cold Weather. The Flowers are produced toward the upper Part of the Stalks, from the Bosom of the Leaves, standing upon slender Foot Stalks; these are composed of 3 blue Petals pretty large and roundish, and 3 smaller which are green;

green; the Seeds are like those of the other Sorts. It flowers in *June*, *July*, and *August*, and the Seeds ripen in Autumn, soon after which the Stalks decay, but the Roots may be preserved 2 or 3 Years.

The 5th Sort grows naturally in the *West-Indies*, the Seeds were sent me from the Island of *Barbuda*. This hath trailing Stalks like the first, garnished with narrow grassy Leaves, embracing the Stalks, with their Base; the Flowers are produced at the End of the Stalks, upon thick Foot Stalks, 3 Flowers generally sitting on each. They have 3 equal large Petals of a Sky Blue, and 3 smaller which are green. These flower in *July* and *August*, but have not perfected Seeds in *England*.

All the Sorts are propagated by Seeds; the first will come if sown in the full Ground; but if the Seeds are sown upon a warm Border of light Earth in Autumn, the Plants will rise early in Spring; so from these good Seeds may be expected if the Season proves favourable, whereas those which are sown in Spring, often lie long in the Ground, and rarely ripen their Seed. These Plants have but little Beauty, so that 2 or 3 of each Sort, is sufficient; if the Seeds are sown in Autumn where the Plants are designed to remain, or the Seeds permitted to scatter, the Plants will require no Care but to keep them clear from Weeds.

The 2d Sort hath a perennial Root; this seldom ripens Seeds in *England*, but the Roots send out Offsets, by which it is easily propagated. This is too tender to live in the open Air in Winter, therefore should be planted in Pots, and sheltered under a common Frame, and exposed abroad in Summer; the best Time to transplant and part these Roots is about the End of *March*.

The other Sorts are tender, so their Seeds must be sown on a moderate hot Bed in Spring, and when the Plants are two Inches high, they should be transplanted to a fresh hot Bed to bring them forward; when they have taken fresh Root, they should have a large Share of fresh Air every Day in warm Weather, to prevent their growing weak, and in *June* they may be carefully taken up and transplanted on a warm Border of light Earth, observing to shade them till they have taken fresh Root, after which they will require no other Care, but to keep them clean from Weeds. With this Management the Plants will flower and produce good Seeds.

The 3d and 4th Sorts may be continued, if they are planted in Pots, and placed in the bark Stove in Autumn; or if the Roots of the 4th Sort are taken out of the Ground in Autumn, and kept in a warm Place in Winter, they may be planted on a hot Bed in Spring to forward their shooting, and these will produce stronger Plants than those which rise from Seeds.

COMMONS and COMMON FIELDS. See Land.

COMPARTMENTS are Beds, Plats, Borders, and Walks, laid out according to the Form of the Ground, and Ingenuity of the Artist, and depend more on a good Fancy than any Rules. These are Diversities in Knots, Flower Gardens, or Parterres, of which there are great Variety, and may be diversified infinitely, according to the Fancy of the Designer.

Plain Compartments are Pieces of Ground divided into equal Squares and Flower Beds, marked out by the Line, of equal Length and Breadth.

Some Persons allow to these Squares, Borders of 2 Feet in Breadth, and not more, if the Plat of Ground be small; but if they be reasonably large, 3 Feet; and they edge the Borders with Box, or upright hardy Thyme, or some other aromatick Herbs or Flowers, for the Sake of the greater Neatness.

In order to preserve the Paths and Alleys firm, even, and durable, they lay them with a Coat of Sand or Gravel, 2 or 3 Inches thick, keeping them hoed and weeded as often as there is occasion.

These were much esteemed by the *French*, whose Gardens were all laid out into several Compartments, Salons, Bosquets, &c. after the Manner of Architects in Buildings; but these stiff, unnatural Gardens are now justly exploded, and a much better Taste has of late prevailed in the *English* Gardens.

COMPOSTS in Husbandry and Gardening signify several Sorts of Soils or earthy Matter mixed together, in order to make a Manure for assisting the natural Earth in the Work of Vegetation, by way of Amendment or Improvement.

Composts are various, and ought to be so, according to the different Nature or Quality of the Soils which they are designed to meliorate: And according as the Land is either light, sandy, loose, heavy, clayey, or cloddy. A light loose Land requires a Compost of a heavy Nature, as the Scouring of deep Ditches, Ponds, &c.

So on the other hand, a Land that is heavy, clayey, or cloddy, requires a Compost of a more sprightly and fiery Nature, that will insinuate itself into the lumpish Clods; which if they were not thus managed, would very much obstruct the Work of Vegetation.

The great Use of Composts is for such Plants as are preserved in Pots or Tubs; or in small Beds or Borders of Flower Gardens; which is what I shall here mention, and shall treat of those Composts or Dressings, which are used in Gardens and Fields, under the Articles of Dung and Manure.

As some Plants delight in a rich light Soil, others in a poor sandy Soil, and some in a loamy Soil; so there should be different Composts prepared, in all those Gardens, where a great Variety of Plants are cultivated: And this is much more necessary in Countries at a great Distance from *London*; than in the Neighbourhood of it, because there is so great Variety of Lands, within 10 Miles round *London*, which have been so long dressed, and cultivated, that a Supply of Earth fit for all Sorts of Plants, may be easily procured; but in some Places which are at a Distance from large Towns, it is very difficult to procure a Quantity of Earth proper for the choicer Sort of Flowers and Plants; therefore the Composts will require more Care, and should be mixed a considerable Time longer before they are used; that they may have the Advantage of Heat and Cold, to meliorate and improve them; and should be frequently turned over, that the Parts may be well mixed and incorporated, and the Clods well broken and divided.

Almost every one who hath written on this Subject, hath directed the upper Surface of Earth from a Pasture Ground, for one of the principal Ingredients, in most Composts for Plants; which is certainly a very good one provided it has Time to meliorate before it is used; for if this is mixed up hastily, and put into Pots or Tubs, before

before it has had a Winter's Frost, and Summer's Heat, to loosen the Parts effectually; it will unite and cake together, so hard, as to starve the Plants that are put into it. For all Earth when put into Pots or Tubs, is much more apt to bind, than when it is in Beds; therefore should be in Proportion made looser, according to the Nature of the Plants for which it is designed, than when it is intended for Beds or Borders. So that if this Earth from a Pasture, cannot be prepared and mixed at least one Year before it is used; it will be much better to take the Earth of a Kitchen Garden which has been well wrought and dunged; but this should be clear from all Roots of Trees and bad Weeds. If this Earth is well mixed with the other Parts six Months, and often turned over, it will be fitter for Pots and Tubs, than the other will in twice that Time, as I have frequently experienced, so can write from Knowledge, nor from Theory. This Earth being the principal Ingredient in Composts designed for such Plants as require a rich Soil; the next is a Quantity of very rotten Dung, from old hot Beds; or for those Plants which delight in a cool Soil, a Quantity of rotten Neats Dung is preferable. The Proportion of this must be according to the Quality of the Earth; for if that is poor, there should be one third Part of Dung, but if it be rich, a 4th Part or less will be sufficient. These, when well incorporated and the Parts divided, will require no other Mixture, unless the Earth is inclinable to bind, in which Case it will be proper to add, some Sand or Sea Coal Ashes to it; if Sea Sand can be easily produced, that is the best, the next to that is drift Sand; but that from Pits is by no means proper. The Proportion of this must be according to the Nature of the Earth, for if that is stiff, there must be a greater Proportion used, but this should not exceed a fifth Part, unless it is very strong, in which Case it will require a longer Time to lie, and must be often turned over before it is used.

The next Compost, for Plants which do not require so good Earth, and naturally grow on loose Soils, should be half of the before mentioned Earth from a Pasture, or that from a Kitchen Garden; and if these are inclinable to bind, there should be a third Part Sand, and the other Part rotten Tan, which will be of great Use to keep the Parts divided, and let the Moisture pass off.

The Composition for most of the succulent Plants, is prepared with the following Materials; the Earth from a Common, where it is light, taken on the Surface, one Half, the other Half Sea or drift Sand, and old Lime Rubish screened of equal Parts; these, well mixed and often turned over, I have found to answer better than any other Compost, for most of the very succulent Plants.

The other Sort of Compost, which is designed for Plants which delight in a very loose, light, rich Earth; should be made of light Earth taken from a Kitchen Garden, which has been well dunged, and thoroughly wrought, like those near London, one Half; of rotten Tanners Bark one Third, and the other Part Mud from the scouring of Ditches, or from the Bottoms of Ponds, where the Soil is fat: But this Mud should lie exposed in small Heaps a whole Year, and often turned over before it is mixed with the other, and afterward fre-

quently turned and mixed, for eight Months or a Year before it is used.

In all Mixtures, where rotten Wood may be required, if the rotten Tanners Bark, which is taken from old hot Beds is used, that will answer every Purpose of the other; and wherever Sand is necessary in any Compost, the Sea Sand should always be preferred to all other, as it abounds with more Salts; but this should not be used fresh, because the Salts should be exposed to the Air, which will loosen the Particles, and thereby render them better adapted for the Nutriment of Vegetables.

There are some who have directed the Use of rotten Leaves of Vegetables, as an excellent Ingredient in Composts; but from many years Experience, I can affirm, they are of little Use, and contain the least Quantity of vegetable Pasture, of any Dressing which is used. Others, who never have had any Experience in the Culture of Plants, have directed different Composts for almost every Plant; and these consist of such a Variety of Ingredients, as greatly to resemble the Prescriptions of a Quack Doctor; for no Person who has been conversant in the Business of Gardening, could be guilty of such gross Absurdity: For it is well known, that a few different Composts will be sufficient for all the known Plants in the World. But those who pretend to give Directions for the Culture of Plants from Theory only, begin at the wrong End, for the true Knowledge of Gardening or Agriculture, must be from Experience, and is not to be obtained in a Garret.

The several Sorts of Dressing for Land, will be particularly treated under their respective Titles, and in general will be mentioned under the Article of Dung.

In making any Compost, great Care should be had, that the several Parts are properly mixed together, and not to have too much of any one Sort thrown together; therefore, when 3 or 4 several Sorts are to be mixed together, there should be a Man or two placed to each Sort, in Proportion to the Quantity of each; for if two Parts of any one Sort are requisite to be added, there should be two Men put to that, and but one to each of the other: And these Men must be careful to spread each Sort in such a Manner over each other, as that they may be exactly mixed together. Another Thing which should be observed is, never to lay these Composts in too large Heaps, but rather continue them in Length, laying them up in a Ridge; so that the Sun and Air may more easily penetrate through it: And, as these Composts should (if possible) be made a Year before they are used, that they may enjoy a Summer's Sun and Winter's Frost, they should be frequently turned over, which will prevent the Growth of Weeds, and expose every Part of the Heaps equally to the Sun and Air, which is of great Advantage to all Sorts of Composts; for the more they are exposed to the Influences of these, the better will the Earth be prepared for Vegetation, this is evinced by fallowing of Land, which, when rightly managed, is equivalent to a Dressing.

COMPOUND FLOWERS are such as consist of many Florets, or Semiflorets, or both together, which are included in one common Empalement, so make up what is commonly called one whole Flower.

CONE. A Cone is a hard, dry, Seed Vessel of a Sugar-loaf Figure, consisting of several woody Parts; and

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and is, for the most part, scaly, adhering closely together, and separating when ripe.

CONIFEROUS TREES are such as bear Cones; as, the Cedar of Lebanon, Fir, Pine, &c.

CONIUM. Lin. Gen. Plant. 299. *Cicuta Tourn. Inst. R. H.* 306. Tab. 160. Hemlock, in French *Cigue*.

The Characters are,

It is an umbelliferous Plant; the general Umbel is composed of several small ones termed Rays, which spread open, which are also spread in the like Manner. Both these have Involucrum, composed of many short Leaves. The Petals of the greater Umbel are uniform; each Flower is composed of 5 unequal Heart-shaped Petals which turn inward, they have 5 Stamina, which are terminated by roundish Summits. The Germen, which is situated under the Flower, supports two reflexed Styles, crowned by obtuse Stigmata. The Germen becomes a roundish channeled Fruit, divided into two Parts, containing two Seeds, which are convex and furrowed on one Side, and plain on the other.

The Species are,

1. CONIUM *feminibus striatis, foliis incis.* Conium with striated Seeds, and smaller Leaves cut at the Top. This is the *Cicuta major*. C. B. P. 160. Greater Hemlock.

2. CONIUM *feminibus striatis, foliis tenuioribus.* Conium with striated Seeds and narrower Leaves. This is the *Cicuta major, foliis tenuioribus*. C. B. P. 160. Greater Hemlock with narrower Leaves.

3. CONIUM *feminibus aculeatis.* Hort. Cliff. 92. Hemlock with prickly Seeds. This is the *Caucalis Africana, folio minore, Ruta. Boerb. Ind. Alt. Sp.* 63. African *Caucalis* with a smaller Rue Leaf.

The 1st Sort grows naturally on the Side of Banks and Roads, in many Parts of England; this is a biennial Plant, which perishes after it hath ripened Seeds. It hath a long taper Root like a Parsnep, but much smaller. The Stalk is smooth, spotted with purple, and rises from 4, to upwards of 6 Feet high, branching out toward the Top into several Stalks; these are garnished with decompounded Leaves, whose small Leaves are cut at the Top into 3 Parts; these are of a lucid green, and have a disagreeable Smell. The Stalks are terminated by Umbels of white Flowers, each being composed of about ten Rays (or small Umbels) and these have a great Number of Flowers, which spread open, each sitting upon a slender Foot Stalk; the Seeds are small and channeled, and like those of Anise. It flowers in June, and the Seeds ripen in Autumn.

The 2d Sort differs from the first, in having taller Stalks, which are not so much spotted. The Leaves are much narrower, and of a paler green; and this Difference is constant, for I have cultivated it near 15 Years in the Chelsea Garden, where it has not varied. The Seeds were sent me from Germany, where it grows naturally. This is biennial as the former.

The 3d Sort grows naturally near the Cape of Good Hope, in Africa, from whence the Seeds were brought to Holland, where the Plants have been preserved in some of their curious Gardens. The Seeds of this were sent me by the late Dr. Boerhaave. This Plant rarely grows more than 9 Inches high; the lower Leaves are divided somewhat like those of the small wild Rue, and are of a grayish Colour; those upon the Stalk are much

narrower, but of the same Colour; the Stalks are terminated, by Umbels of white Flowers, each of these larger Umbels being composed of 3 small ones; the Involucrum hath 3 narrow Leaves, situated under the Umbel. This flowers in July, and ripens Seed in Autumn, soon after which the Plants decay.

The 1st Sort grows wild in most Parts of England, so is seldom allowed Room in Gardens, because it is supposed to have a poisonous Quality, some Physicians have affirmed that it is so to all Animals, while others have assured us, that it is eaten by the Inhabitants of some Parts of Italy when it is young, and is by them esteemed a great Dainty. Mr. Ray mentions that he has found the Gizzard of a Thrush, full of Hemlock Seeds, with four or five Grains of Corn, intermixed with it, which, in the Time of Harvest, that Bird had neglected for Hemlock, so very fond was it of that Seed which we reckon pernicious. However it is very certain that scarce any Animal will eat the green Herb; for it is very common to see the Grass, and most other Weeds eat close where Cattle feed, and all the Plants of Hemlock left untouched.

This Plant is esteemed by many Physicians, as an excellent Remedy to dissolve schirrous Tumours; and some have greatly recommended it for Cancers, and most of them agree, that it may be prescribed as a good Narcotic.

The 2d Sort is preserved in some Botanick Gardens for Variety. If the Seeds are permitted to scatter, the Plants will come up in Plenty, and if not rooted out, will become as troublesome Weeds as the first Sort.

The 3d Sort is an humble Plant, and being tender, will never become troublesome; for unless the Winters are very favourable, it will not live in the open Air in England. The Seeds of this Sort should be sown in Pots in Autumn soon after they are ripe, and placed under a common Frame in Winter, where they may be exposed to the open Air at all Times when the Weather is mild, and only covered in bad Weather. The Plants will come up very early in Spring, and must then be exposed to the open Air constantly when the Weather will permit, otherwise they will draw up very weak: As they do not bear transplanting well, they should be thinned, and not more than four or five left in each Pot; they have no great Beauty, so a few of them will be sufficient to continue the Sort, where a Variety of Plants are preserved. The other Culture is only to keep them clean from Weeds, and in very dry Weather, to water them.

There is another Species of this Genus, which is now separated from it, and placed singly under the Title of *Æthusa*. This was titled, *Cicuta minor petroselinis similis*, by Caspar Baubin, i. e. Smaller Hemlock-like Parsley, this is a Weed which frequently is found in Gardens especially in rich Ground; and is generally supposed to be very poisonous: Some who have ignorantly gathered this Herb, and used it for Parsley having been poisoned by it; therefore it was formerly called, Fools Parsley. This may be distinguished from Parsley, by the Narrowness of the small Leaves, which are also more pointed, and of a darker green. But those who are afraid of being deceived in this, should always use the curled Parsley, which is so different from this, that it cannot be mistaken for it.

CONOCARPODENDRON. See Protea.

CONOCARPUS. Lin. Gen. Plant. 213. *Rudbeckia*. Houtt. Nov. Gen. 21. Button Tree, vulgo.

The Characters are,

The Flowers are collected in a globular Head, each standing in a scaly Empalement. At the Bottom is a large compressed Germen, crowned by the Empalement of the Flower which is small, and divided into 5 Parts at Top. The Flower hath one Petal, cut into 5 equal Parts, it hath 5 slender Stamina, which extend beyond the Petal, terminated by roundish Summits. The Germen supports a single Style which is longer than the Stamina, and is crowned by an obtuse Stigma. The Germen becomes a single Seed, inclosed in the Scale of the Fruit, which is shaped like the Cone of Alder.

The Species are,

1. CONOCARPUS, foliis lanceolatis alternis, floribus alaribus in caput conicum collectis. Conocarpus with Spear-shaped Leaves, growing alternate, and Flowers proceeding from the Sides of the Branches, collected in a conical Head. This is the *Rudbeckia erecta longifolia*. Houtt. Miss. Upright *Rudbeckia* with a long Leaf, commonly called Button Tree in the West-Indies.

2. CONOCARPUS, frutescens, procumbens, foliis ovatis crassis, floribus alaribus & terminalibus. Shrubby, trailing Conocarpus, with oval, thick Leaves, and Flowers, growing on the Sides, and at the Ends of the Branches. This is the *Rudbeckia maritima procumbens rotundifolia*. Houtt. Maritime trailing *Rudbeckia*, with a round Leaf.

The 1st Sort grows plentifully in sandy Bays, in all the Islands of the West-Indies. It rises with a woody upright Stem about 16 Feet high, sending out many Side Branches, which also grow erect; these are garnished with Spear-shaped Leaves, having broad short Foot Stalks, and are placed alternate on every Side the Branches. The Flowers grow on short Branches, which arise from the Wings of the Leaves; these have 3 or 4 small Leaves on their lower Part, under the Flowers; each of these Branches are terminated by 6 or 8 conical Heads of Flowers, which have some Resemblance to those of *Acacia*, but each of these come out of a scaly Covering; the Flowers are small, of a reddish Colour having 5 slender Stamina, and one Style, which stand out farther than the Petal. The Flowers are succeeded by single Seeds, included in the Scales of the conical Fruit.

The 2d Sort hath short crooked Branches, which divide and spread out on every Side, upon the Ground; these are covered with a grayish Bark, and their upper Parts are garnished with oval thick Leaves a little larger than those of the Dwarf Box; they have very short Foot Stalks, placed on every Side the Branches without Order. The Flowers are collected in small round Heads which come out single from the Side of the Branches, and in loose Spikes at the End; these are small, and of an herbaceous Colour; the Scales are rough, and the Cones of a looser Texture than those of the former Sort.

This was discovered growing plentifully in Marshy Grounds near the Sea, at the Havannah, from whence the Seeds were sent to England, in 1730.

Both these Sorts are preserved in some curious Gardens for Variety; but are Plants of no great Beauty: They are propagated from Seeds, which must be obtained from the Places of their natural Growth; for they

never produce any good Seeds in Europe: These Seeds, if fresh, will come up very soon, if they are sown upon a good hot Bed; and if the Plants are potted, and preserved in the Bark Stove, they will make great Progress; but they are too tender to live in this Country, unless they are constantly kept in the Stove, and treated as other exotick Plants; observing, as they are Natives of Swamps, to supply them often with Water; but in Winter they must have it very sparingly. These Plants are Evergreen, casting off their old Leaves when the new come out.

CONSOLIDA MAJOR. See Symphytum.

CONSOLIDA MEDIA. See Bugula.

CONSOLIDA MINIMA. See Bellis.

CONSOLIDA REGALIS. See Delphinium.

CONVALLARIA. Lin. Gen. Plant. 383. *Lilium Convallium*. Tourn. Inst. R. H. 77. Tab. 14. Lilley of the Valley, in French, Muguet. To this Genus Dr. Linnæus has joined the *Polygonatum* of Tournefort, or Solomon's Seal.

The Characters are,

The Flower hath one Petal, which is Bell-shaped, and divided at the Brim into six obtuse Parts, which spread open and are reflexed. It hath no Empalement. It hath six Stamina, which are inserted into the Petal, and are shorter, terminated by oblong Summits, which are erect. In the Center is situated a globular Germen, supporting a slender Style, which is longer than the Stamina, crowned by a three cornered obtuse Stigma. The Germen becomes a globular Berry, with three Cells, containing one roundish Seed.

The Species are,

1. CONVALLARIA scapo nudo. Flor. Lapp. 113. *Convallaria* with a naked Stalk. This is the *Lilium Convallium Album*. C. B. P. 304. White Lilly of the Valley. There is a Variety of this in Gardens, with reddish Flowers, titled by Caspar Baubin, *Lilium convallium flore rubente*. Pin. 304. Lilly of the Vallies with a blushing Flower.

2. CONVALLARIA scapo nudo, foliis latioribus. *Convallaria* with a naked Stalk, and broader Leaves. This is the *Lilium Convallium latifolium*. C. B. P. 136. Broad leaved Lilly of the Valley. There is also a Variety of this with double variegated Flowers. This Tournefort titles *Lilium Convallium latifolium, flore pleno variegato*. Inst. R. H. 77. Broad leaved Lilly of the Vallies, with a large variegated Flower.

3. CONVALLARIA foliis alternis, floribus axillaribus. Flor. Succ. 274. *Convallaria* with Leaves placed alternate, and Flowers proceeding from the Sides of the Stalks. This is the *Polygonatum latifolium vulgare*. C. B. P. 305. Common broad leaved Solomon's Seal.

4. CONVALLARIA foliis alternis, semiamplexicaulibus, floribus majoribus axillaribus. *Convallaria* with alternate Leaves, which half embrace the Stalks, and larger Flowers proceeding from the Sides. This is the *Polygonatum latifolium, flore majore odore*. C. B. P. 303. Broad leaved Solomon's Seal with a larger sweet Flower.

5. CONVALLARIA foliis amplexicaulibus, caule tereti, pedunculis axillaribus multifloris. Lin. Pbil. Bos. 218. *Convallaria* with a taper Stalk, embraced by the Leaves, and Foot Stalks proceeding from the Sides, sustaining many Flowers. This is the *Polygonatum latifolium maximum*. C. B. P. 303. Greatest broad leaved Solomon's Seal.

6. CONVALLARIA foliis alternis petiolatis, pedunculis axillaribus trifloris. *Convallaria* with alternate Leaves, having

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having Foot Stalks, those to the Flowers proceeding from the Sides, and sustaining three Flowers. This is the *Polygonatum latifolium Hellebori albi foliis*. C. B. P. Broad leaved Solomon's Seal with a white Hellebore Leaf.

7. *CONVALLARIA foliis verticillatis*. Flor. Lapp. 114. *Convallaria* with Leaves growing in Whorls. This is the *Polygonatum angustifolium, non ramosum*. C. B. P. 303. Unbranched Solomon's Seal with narrow Leaves.

8. *CONVALLARIA foliis sessilibus, racemo terminali composito*. Lin. Sp. Pl. 315. *Convallaria* with Leaves sitting close to the Stalks, terminated by compound Spikes of Flowers. This is the *Polygonatum Virginianum erectum, spicatum, flore stellato sterili*. Mor. Hist. Upright spiked Solomon's Seal of Virginia, with a flarry barren Flower.

9. *CONVALLARIA foliis amplexicaulibus plurimis, racemo terminali simplici*. Lin. Sp. Plant. 316. *Convallaria* with many Leaves embracing the Stalks, which are terminated by single Bunches of Flowers. This is the *Polygonatum Canadense spicatum fertile*. Cornut. Canad. 33. Tab. 33. Canada Solomon's Seal with a fertile Spike.

10. *CONVALLARIA foliis cordatis*. Flor. Lapp. 113. *Convallaria* with Heart-shaped Leaves. This is the *Smilax unifolia humillima*. Tourn. Inst. App. 564. Lowest *Smilax* with a single Leaf; and the *Lilium Convallium minus*. C. B. P. 304. The least Lilly of the Valley.

The first Sort grows naturally in great Plenty in the Woods near *Woburn*, in *Bedfordshire*, from whence the Markets in *London* are generally supplied with the Flowers. It is also cultivated in Gardens for the Sweetness of the Flowers.

This hath a slender fibrous Root, which creeps under the Surface of the Ground, and thereby propagates in great Plenty. The Leaves come up by Pairs, their Foot Stalks, which are about three Inches long, are wrapped together in one Cover, and at the Top divide into two Parts, each sustaining a single Leaf, one of which rises a little above the other; these Leaves are from four to five Inches long, and near an Inch and a Half broad in the Middle, lessening gradually to both Ends; these have many longitudinal Veins, running parallel to the Mid-rib, which is not situated exactly in the Middle, but diverges to one Side; the Foot Stalks of the Flowers arise immediately from the Root, on one Side the Leaves; these are naked, about five Inches long, and are adorned toward their upper Parts with pendulous white Flowers, ranged on one Side the Stalk, which declines to one Side; each Flower stands upon a short separate Foot Stalk, which is bending and crooked. The Flowers are open, of the short Bell-shaped Kind, their Brims being reflexed, which are slightly cut into six Parts; they have six Stamina, inserted in the Petal of the Flower, and shorter than the Tube, and a single Style arising from the Germen, which is triangular, and crowned by a three cornered Stigma; the Germen becomes a globular Berry, of a red Colour when ripe, inclosing three roundish Seeds. It flowers in *May*, from whence it has been titled *May Lilly*. The Seeds ripen in Autumn. The Flowers of this Sort are used in Medicine; they are esteemed cephalick and cordial, so are recommended for Palsies, Epilepsies, and Spasms; of which is prepared a Conserve, and a compound distilled Water. This compound Water is

by the *Germans* titled *Aqua Aurea*, or Golden Water, because of its excellent Virtues.

There is another Variety of this with narrow Leaves, which I suppose may arise from the Soil, or Situation, for the Roots which I have taken up in those Places have naturally narrow Leaves, but when planted in the Garden, have produced Leaves as broad as the common Sort; but the Sort with red Flowers has constantly continued the same above thirty Years, without any Variation. The Flowers of this are smaller, the Stalks are redder, and the Leaves of a darker green than those of the common Sort, but as I have not propagated this Sort by Seeds, I cannot be sure if it is a distinct Species, or only a feminal Variety.

The 2d Sort I received from the *Alps*, where it naturally grows; this has retained its Difference in the Garden, where it grew in the same Soil and Situation with the common Sort, so I make no Doubt of its being a distinct Species. The other with a double variegated Flower is supposed to be only a Variety of this, but the Flowers are much larger, and beautifully variegated with purple and white. I received a Plant of it from the Royal Garden at *Paris*, which has flowered several Years in the *Chelsea* Garden, but the Roots do not increase.

These Plants require a loose sandy Soil, and a shady Situation; they are propagated by parting their Roots, which multiply in great Plenty. The best Time to transplant and part the Roots, is in Autumn. They should be planted near a Foot asunder, that their Roots may have Room to spread; for if they agree with the Soil and Situation, they will meet and fill the Ground in one Year. If these Roots are planted in a rich Soil, they will spread and multiply greatly, but will not be so productive of Flowers. The only Culture they require, is to keep them clean from Weeds, and transplant and separate the Roots every 3d or 4th Year, otherwise they will be so greatly matted together, as not to have proper Nourishment, so the Flowers will be small, and few in Number.

The 3d Sort is the common *Solomon's Seal*, which is said to grow naturally wild in *England*, but I doubt ours is a different Sort from that mentioned by *Caspar Baubin* under that Title; for in two Places where I have found it growing, the Stalks were much shorter, the Leaves broader, and their Borders turned inward; this Difference continues in the Garden, where it grows in the same Soil and Situation with the other.

This Plant hath a fleshy white Root, as large as a Man's Finger, which creeps in the Ground, and is full of Knots, from whence it had the Name of *Polygonum*, or many Knees. In the Spring arise several taper Stalks, which grow near two Feet high, adorned with oblong oval Leaves, placed alternate, having many longitudinal Veins running parallel to the Middle, and embrace the Stalks with their Base; these are ranged on one Side of the Stalk, and on the opposite Side come out the Foot Stalks of the Flowers, which are about an Inch long, dividing at the Top into three or four smaller, each sustaining a single tubulous Flower, cut into six Parts at the Brim, where it is green, the lower Part of the Tube being white; these have each six slender Stamina, surrounding a single Style, which arises from the Ger-

men, and is crowned by a blunt Stigma; the Germen becomes a round Berry, about the Size of Ivy Berries, each inclosing three Seeds. This flowers in *May*, and the Seeds ripen in Autumn, and then the Stalks decay.

The 4th Sort does not rise so high as the 3d, the Leaves are broader, and half embrace the Stalks with their Base. It hath fewer Flowers on each Foot Stalk, and those are much larger, and smell sweet; this Difference continues when cultivated in a Garden. It grows naturally in the Woods in *Austria*, and other Parts of *Germany*.

The 5th Sort rises much higher, the Leaves are broader, and embrace the Stalks with their Base, there are many more Flowers on each Foot Stalk, which have longer and narrower Tubes than either of the former. This grows naturally in the northern Parts of *Europe*.

The 6th Sort hath large fleshy Roots, full of Knots, or Joints, which send up many Stalks above 3 Feet high; these are garnished with oblong oval Leaves, near 5 Inches long, and above two Inches broad in the Middle, having many deep longitudinal Furrows, running parallel to the Mid-rib, somewhat like those of white Hellebore; these have short Foot Stalks. The Flowers come out on the opposite Side of the Stalks from the Leaves, having short Foot Stalks, which divide into 3 smaller, each sustaining one Flower, with a long slender Tube, more closed at the Top than those of the other Species, but the Colour is the same. This grows naturally on the *Alps*, and the Mountains in *Italy*.

The 7th Sort rises with an upright Stalk, about 2 Feet high, garnished with long narrow Leaves, which stand in Whorls round the Stalk, there are generally 5 of these placed at each Joint; they are 4 Inches long, and Half an Inch broad, smooth, and of a light green. The Flowers come out from the same Joints, on short Foot Stalks, each supporting 5 or 6 Flowers, which are smaller, and have much shorter Tubes than either of the former Sorts; they are of a dirty white tipped with green, and slightly cut into six Parts at the Top. It grows naturally in the northern Parts of *Europe*.

The 8th Sort grows naturally in most Parts of *North America*; This rises with an upright Stalk, about 2 Feet high, garnished with oblong Leaves, ending in sharp Points; these are near 5 Inches long, and two and a Half broad, having 3 large longitudinal Veins, with several smaller between, which join at both Ends. The Leaves are alternate, standing close to the Stalks, and are of a light green on their upper Side, but paler on their under. The Flowers are produced in branching Spikes at the Extremity of the Stalks, each being composed of several small loose Spikes of Star like Flowers, of a pale yellow, which fall away without producing any Seed. This flowers the latter End of *May*, or Beginning of *June*, and the Stalks decay in Autumn, but the Root is perennial, and propagates by Offsets.

The 9th Sort is a Native of the same Country; this sends up Stalks 2 Feet high, garnished with many oblong Leaves embracing the Stalks with their Base. The Flowers are produced in single Spikes at the Top of the Stalks, which are in Shape and Colour like those of the 8th; but these are succeeded by small red Berries, about the Size of those of the Lily of the Valley. This flowers the Beginning of *June*, the Berries ripen in Autumn.

All these Sorts of *Solomon's Seal* are very hardy Plants, and delight in a light Soil and a shady Situation, so are very proper to plant in Wilderness Quarters under tall Trees, where if they are not crowded by lower Shrubs, they will thrive and multiply exceedingly, and during the Summer Season will make an agreeable Variety, the whole Appearance of the Plants being very singular.

They all multiply very fast by their creeping Roots, especially when planted in a proper Soil and Situation. The best Time to part and transplant the Roots is in Autumn, soon after their Stalks decay; those which are removed at this Season, will grow much stronger, than those which are planted in the Spring, which is the Reason of my preferring that Season; but they may be safely transplanted any Time after the Stalks decay, till the Roots begin to shoot in the Spring. As these Roots greatly increase, they should be planted at a wide Distance from each other, that they may have Room to spread, for they should not be removed oftener than every third or fourth Year, where they are expected to grow strong, and produce a good Number of Stalks, in which their Beauty consists. The only Culture these Plants require, is to dig the Ground between them every Spring, and keep them clean from Weeds.

The Roots of the 3d Sort are used in Medicine; it is greatly recommended in all Manner of Contusions. The distilled Water of the Plant clears the Face, and beautifies the Complexion; a Decoction of it cures the Itch, and such like cutaneous Distempers.

The 10th Sort is a humble Plant, which when transplanted into Gardens, seldom rises above six Inches high, and where it grows naturally, not much more than half so high; this hath a fibrous creeping Root, which spreads and multiplies greatly in the Ground, sending up many slender Stalks, each having for the most part two Heart-shaped Leaves, one standing above the other. The Stalks are terminated by loose Spikes of white Star-like Flowers, succeeded by small red Berries. This flowers in *May*, and the Stalks decay in Autumn.

It grows naturally in all the northern Parts of *Europe*, and delights in a moist Soil and a shady Situation, where it will spread and multiply in great Plenty. This is propagated by its creeping Roots, and may be treated in the same Way as the former Sorts.

CONVOLVULUS. *Lin. Gen. Plant.* 198. *Tourn. Inst. R. H.* 82. *Tab.* 77. Bindweed in *French Liferon*.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is divided into five Parts at the Top; the Flower hath one large Bell-shaped Petal which spreads open. It hath five short Stamina, terminated by oval and compressed Summits. It hath a roundish Germen, supporting a slender Style, crowned by two broad oblong Stigmas. The Empalement afterward becomes a roundish Capsule, with one, two, or three Valves, containing several Seeds which are convex on their Outside, but on the Inside angular.

The Species are,

1. CONVOLVULUS foliis sagittatis utrinque acutis, pedunculis unifloris. *Flor. Suec.* 173. Bindweed with Arrow-shaped Leaves, pointed on both Sides, and a single Flower on each Foot Stalk. This is the *Convolvulus minor arvensis*. *C. B. P.* 294. Smaller Field Bindweed, commonly called, Gravel Bindweed.

2. CONVULVULUS, *foliis sagittatis posticè truncatis, pedunculis unifloris*. Prod. Leyd. Bindweed with Arrow-shaped Leaves, which are torn behind, and a single Flower on each Foot Stalk. *Convolvulus major albus*. C. B. P. Larger white Bindweed, called Bearbind.

3. CONVULVULUS, *foliis sagittatis posticè truncatis, pedunculis bifloris*. Prod. Leyd. Bindweed with Arrow-pointed Leaves torn behind, and two Flowers on each Foot Stalk. *Convolvulus Syriacus* & *Scammonia Syriaca*. Mor. Hist. Syrian Bindweed, and Syrian Scammony.

4. CONVULVULUS *annuus, foliis cordatis calycibus acutis, villosis*. Annual Bindweed, with Heart-shaped Leaves, and hairy Empalements which are pointed. This is the *Convolvulus purpureus, folio subrotundo*. C. B. P. Purple Bindweed with a roundish Leaf, commonly called, *Convolvulus major*, or greater Bindweed.

5. CONVULVULUS, *foliis cordatis, acuminatis, pedunculis trifloris*. Bindweed with Heart-shaped, pointed, Leaves, and three Flowers on each Foot Stalk. This is the *Convolvulus major, folio subrotundo, flore amplo purpureo*. Sloan. Cat. Jam. 55. Greater Bindweed with a roundish Leaf and a large purple Flower.

6. CONVULVULUS, *foliis cordatis trilobis villosis, calycibus lævibus, capsulis birsutis, pedunculis bifloris*. Bindweed with Heart-shaped Leaves having three Lobes, which are hairy, smooth Flower Cups, hairy Seed Vessels, and two Flowers on each Foot Stalk. This is the *Convolvulus cæruleus bederaceo anguloso folio*. C. B. P. 295. Blue Bindweed, with an angular Ivy Leaf.

7. CONVULVULUS, *foliis cordatis angulato-nervosis, caule repente tubifero*. Lin. Sp. Pl. 154. Bindweed with Heart-shaped Leaves, having angular Nerves, and a creeping Stalk bearing Tubers. This is the *Convolvulus radice tuberosâ esculentâ minore purpurea*. Sloan. Cat. Jam. 54. Bindweed with a small purple tuberous esculent Root, commonly called Spanish Potatoes.

8. CONVULVULUS, *foliis palmatis, lobis septem-sinuatis acutis, pedunculis unifloris, calycibus maximis patentibus*. Bindweed with palmated Leaves with seven sinuated pointed Lobes, a single Flower on each Foot Stalk, and a large spreading Empalement. This is supposed to be the *Convolvulus pentaphyllos, folio glabro dentato, viticulis birsutis*. Plum. Cat. Five leaved Bindweed with smooth indented Leaves, and hairy Stalks.

9. CONVULVULUS, *foliis hastato lanceolatis, auriculis rotundatis, pedunculis multifloris*. Bindweed with Spear-pointed Leaves having rounded Ears, and many Flowers on each Foot Stalk. This is the *Convolvulus Americanus, Aristolochiæ folio longiore, floribus plurimis*. Houst. Mss. American Bindweed, with a longer Birthwort Leaf and many Flowers on one Foot Stalk.

10. CONVULVULUS, *foliis cordatis subhastatisque villosis, caule petiolisque pilosis, pedunculis multifloris*. Lin. Sp. Pl. 159. Bindweed with Heart-shaped Leaves somewhat Spear-pointed and downy, with hairy Stalks and Foot Stalks, and many Flowers on each. This the *Convolvulus Americanus polyanthos, albæ folio villoso*. Houst. Mss. American Bindweed with many Flowers, and a downy Marsh Mallow Leaf.

11. CONVULVULUS, *foliis ovato oblongis, glabris pedunculis unifloris, calycibus decempartitis*. Bindweed with oval, oblong, smooth Leaves, and Foot Stalks having a single Flower, whose Empalement is cut into ten Parts.

This is the *Convolvulus floribus amplis purpureis*. Houst. Mss. Bindweed with long purple Flowers.

12. CONVULVULUS *birsutissimus, foliis quinquelobatis, pedunculis longissimis bifloris*. Very hairy Bindweed, with Leaves having five Lobes, and very long Foot Stalks with two Flowers.

13. CONVULVULUS, *caule fruticoso, glabro, foliis quinque lobis, pedunculis geniculatis, unifloris, capsulis maximis*. Bindweed with a shrubby, smooth Stalk, Leaves having five Lobes, many jointed Foot Stalks with one Flower, and very large Seed Vessels. This is the *Convolvulus pentaphyllos, flore & fructu purpureis maximis*. Plum. Cat. Five leaved Bindweed with a very large purple coloured Flower and Fruit.

14. CONVULVULUS, *foliis emarginatis, pedunculis trifloris*. Lin. Sp. Plant. 159. Bindweed with indented Leaves and Foot Stalks, having three Flowers. This is the *Convolvulus marinis Catharticus, folio rotundo, flore purpureo*. Plum. pl. Amer. 89. Tab. 104. Purging Sea Bindweed, with a round Leaf and a purple Flower.

15. CONVULVULUS, *foliis cordatis, glabris, pedunculis multifloris, semine villoso ferrugineo*. Bindweed with smooth, Heart-shaped Leaves, Foot Stalks having many Flowers, and Seeds covered with an Iron coloured Down.

16. CONVULVULUS, *foliis cordatis pubescentibus, caule perenni, villoso, pedunculis multifloris*. Lin. Sp. Pl. 155. Bindweed with soft, woolly, Heart-shaped Leaves, a hairy perennial Stalk, and Foot Stalks having many Flowers. This is the *Convolvulus Canariensis sempervirens*. Hort. Amst. Ever-green Canary Bindweed.

17. CONVULVULUS *foliis triangularibus acutis, floribus plurimis sessilibus patulis, calycibus acutis, multifidis*. Bindweed with sharp pointed triangular Leaves, many spreading Flowers set close to the Stalk, and acute Empalements ending in many Points. This is the *Convolvulus folio bederaceo, anguloso, lanuginoso, flore magno, cæruleo, patulo*. Sloan. Bindweed with an angular, woolly, Ivy Leaf, and a large spreading blue Flower.

18. CONVULVULUS *foliis cordatis, acuminatis, pedunculis bifloris*. Bindweed with Heart-shaped, pointed Leaves, and Foot Stalks, having two Flowers. This is the *Convolvulus Americanus birsutus, flore amplo roseo*. Houst. Mss. Hairy American Bindweed with a pointed Leaf, and a large Rose coloured Flower.

19. CONVULVULUS *foliis sagittatis posticè obtusis, caule repente, pedunculis unifloris*. Lin. Sp. Pl. Bindweed with narrow pointed Leaves, obtuse at the Foot Stalk, a creeping Stalk, and one Flower on each Foot Stalk. This is the *Convolvulus marinus catharticus, foliis Acetosæ, flore niveo*. Plum. Pl. Am. 89. Purging Sea Bindweed with a Sorrel Leaf, and Snow white Flower.

20. CONVULVULUS *foliis cordato sagittatis pedunculis unifloris*. Bindweed with Heart-shaped, Arrow-pointed Leaves, and Foot-Stalks having a single Flower. This is the *Convolvulus exoticus, Betonicæ folio, flore magno albo fundo purpureo*. Foreign Bindweed with a Betony Leaf, and a large white Flower with a purple Bottom.

21. CONVULVULUS, *foliis cordato ovatis, pedunculis unifloris, bracteis lanceolatis, flore sessile*. Hort. Cliff. 68. Bindweed with oval Heart-shaped Leaves, Foot Stalks having one Flower, Spear-shaped Bractææ, and the Flower sitting close to the Stalk. *Convolvulus ficulus minor*, S f 2

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flore parvo auriculato. Bocc. Pl. Sic. 89. Lesser Sicilian Bindweed, with a small, auriculated Flower.

22. CONVULVULUS *foliis palmatis sericeis, pedunculis bifloris, calycibus acutis.* Bindweed with silky, palmated Leaves, Foot Stalks having 2 Flowers, and sharp pointed Empalements. This is the *Convolvulus argenteus, elegantissimus, foliis tenuiter incis.* Tourn. Inst. Most beautiful Silver Bindweed, with finely cut Leaves.

23. CONVULVULUS *foliis cordatis incis, & incanis, pedunculis bifloris, calycibus obtusis.* Bindweed with hoary Heart-shaped Leaves, which are jagged, Foot Stalks having 2 Flowers, and obtuse Empalements. This is the *Convolvulus Lusitanicus flore Cyaneo.* Brofs. Portugal Bindweed with a blue Flower.

25. CONVULVULUS *villosus foliis linear lanceolatis, caule erecto, pedunculis multifloris.* Hairy Bindweed with narrow Spear-shaped Leaves, an upright Stalk, and Foot Stalks, having many Flowers. This is the *Convolvulus linariæ folio affurgens.* Tourn. Inst. R. H. 83. Upright Bindweed, with a Toad Flax Leaf.

26. CONVULVULUS *foliis lanceolatis, sericeis, caule declinato, radice repente, pedunculis multifloris.* Bindweed with silky Spear-shaped Leaves, a declining Stalk, creeping Root and Foot Stalks, having many Flowers. *Convolvulus minor, argenteus, repens, acaulis ferme.* Smaller silvery, creeping Bindweed, with scarce any Stalk.

27. CONVULVULUS *foliis lanceolatis obtusis sericeis pedunculis multifloris.* H. C. Bindweed with blunt, Spear-shaped, silky Leaves, and Foot Stalks, having many Flowers. *Convolvulus argenteus umbellatus, erectis.* Tourn. Inst. Silvery umbellated, upright, Bindweed.

28. CONVULVULUS *foliis linear lanceolatis, acutis caule ramoso, erecto, pedunculis unifloris.* H. C. 68. Bindweed with narrow Spear shaped Leaves pointed upright, a branching Stalk, and Foot Stalks with one Flower. This is the *Convolvulus ramosus incanus, foliis pilosellæ.* C. B. P. Hoary, branching Bindweed, with a Mouse Ear Leaf.

29. CONVULVULUS *foliis subovatis, obtusis, petiolatis pilosis, caule diffuso, pedunculis trifloris.* Flor. Zeyl. 76. Bindweed with oval, obtuse, hairy Leaves, having Foot Stalks, diffused Stalks, and 3 Flowers on each Foot Stalk. *Convolvulus Indicus minor, Alfinæ folio.* Housl. Mss. Smaller Indian Bindweed with a Chickweed Leaf.

30. CONVULVULUS *foliis reniformibus, pedunculis unifloris.* H. C. Bindweed with Kidney-shaped Leaves, and one Flower on each Foot Stalk. This is the *Soldanella maritima minor.* C. B. P. Lesser Sea Bindweed.

31. CONVULVULUS *foliis cordatis, angulatis, caule membranaceo, quadrangulati, pedunculis, multifloris.* Flor. Zeyl. 72. Bindweed with angular Heart-shaped Leaves, a quadrangular membranaceous Stalk, and Foot Stalks, having many Flowers. This is the *Convolvulus Zeylanicus, alatus, maximus, foliis Ibis nonnihil similibus angulosis.* Herm. Lud. 177. Greatest, winged Bindweed of Ceylon, with many cornered Leaves not unlike *Althea*.

32. CONVULVULUS *foliis variis, pedunculis unifloris, radice tuberosâ.* Bindweed with variable Leaves, Foot Stalks with single Flowers, and a tuberous Root. This is the *Convolvulus Cathartica.* Housl. Mss. The true Jalap.

The 1st Sort is very common on dry Banks, and gravelly Grounds in England, and is generally a Sign of Gravel lying under the Surface. The Roots shoot very deep. It is called Devils Guts.

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From the Root arises many weak Stalks, which trail on the Ground, and fasten themselves about the neighbouring Plants; these are garnished with triangular Arrow-pointed Leaves. The Flowers are produced from the Side of the Branches, having long Foot Stalks, each sustaining a single white or red Flower, and frequently variegated. This is a troublesome Weed in Gardens, so should be constantly rooted out.

The 2d Sort is also a troublesome Weed in Gardens, when the Roots are intermixed with Trees and Shrubs, or under Hedges, where the Plants cannot be easily destroyed: But in an open Spot, where the Plants are carefully hoed down for 3 or 4 Months, they may be effectually destroyed, for when the Stalks are broken or cut, a milky Juice flows out, and the Roots are soon exhausted and decay. The Roots of this Sort are pretty thick, extend far on every Side, and are white. The Stalks rise 10 or 12 Feet, twining themselves about Trees or Hedges, and are garnished with large Arrow-pointed Leaves, which are torn at their Base. The Flowers come out from the Side of the Branches, upon long Foot Stalks, each sustaining one large white Flower, which are succeeded by roundish Seed Vessels having 3 Cells, filled with Seeds which are convex on one Side and plain on the other. It flowers in June, and the Seeds ripen in Autumn, soon after which the Stalks decay to the Root; but as every small Piece of the Root will grow, it is a troublesome Weed to destroy.

The 3d Sort grows naturally in Syria, where the Roots of the Plants are wounded, and Shells placed under the Wounds to receive the milky Juice which flows out, which is inspissated, and afterward put up and exported: This is called *Scammony* in the Shops; it is a very hardy Plant, and will thrive very well in the open Air in England, provided it is on a dry Soil. The Roots are thick, run deep into the Ground, and are covered with a dark Bark. The Branches extend themselves on every Side to the Distance of 3 or 4 Feet, these are slender, trail on the Ground, and are garnished with narrow Arrow-pointed Leaves. The Flowers are of a pale yellow, and come out from the Side of the Branches, two sitting upon each long Foot Stalk; these are succeeded by roundish Seed Vessels, having 3 Cells, filled with Seeds shaped like those of the former Sort, but smaller. It flowers in June, and July, and the Seeds ripen in Autumn. If the Seeds of this Sort are sown in Spring, on a Border of light Earth, the Plants will come up, and require no other Culture but to keep them clean from Weeds, and thin the Plants where they grow too close; for as the Branches extend pretty far, the Plants should not be nearer than 3 Feet. The Stalks decay in Autumn, but the Roots will abide many Years.

The 4th Sort is an annual Plant, which grows naturally in Asia and America, but has been long cultivated for Ornament in the English Gardens, and is generally known by the Title of *Convolvulus major*. Of this there are 3 or 4 lasting Varieties; the most common hath a purple Flower, but there is one with a white, another with a red, and one with a whitish blue Flower, which hath white Seeds. All these Varieties I have cultivated many Years, without observing either of them change. If the Seeds are sown in Spring, on a warm Border where the Plants are designed to remain, they will require

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quire no other Culture, but to keep them clean from Weeds, and place some tall Stakes down by them, for their Stalks to twine about, otherwise they will spread on the Ground, and make a bad Appearance. These Plants, if properly supported, will rise 10 or 12 Feet; they flower in *June, July, and August*, and continue till the Frost kills them. Their Seeds ripen in Autumn.

The 5th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me, this sends out long Branches, which twist about the Trees and rise to a great Height, the Leaves are smooth, Heart-shaped, ending in long Points, and the Ears at the Base are large and rounded; these stand upon long slender Foot Stalks. The Flowers come out on the opposite Side of the Stalks, upon long Foot Stalks, each sustaining 3 Flowers, with longer Tubes than those of the former, and are of a deeper purple Colour, this flowers from the latter end of *June* till the Frost destroys it. As this is not so hardy as the former, the Seeds should be sown on a hot Bed in Spring, to bring the Plants forward, and toward the End of *May*, they should be planted out in warm Borders, and treated as the former Sort.

The 6th Sort grows naturally in *Africa and America*, this is an annual Plant, which rises with a twining Stalk, 8 or 10 Feet high, garnished with Heart-shaped Leaves, divided into 3 Lobes which end in sharp Points, these are woolly, and stand upon long Foot Stalks, the Flowers come out on long Foot Stalks, each sustaining two Flowers of a very deep blue Colour, from whence it has been titled *Anil* or *Indigo*. This is one of the most beautiful Flowers of this Genus, and is undoubtedly a distinct Species; though some have supposed it to be only a Variety of the 4th Sort, for I have cultivated it many Years, and have never found it alter; the Leaves of this having 3 deeply divided Lobes, and those of the 4th Sort being entire, is sufficient to determine their specifick Difference; this Sort is annual, and must be propagated as the 5th. It flowers all the latter Part of Summer, and, in good Seasons, the Seeds ripen well in the open Air.

The 7th Sort is that whose Roots are eaten, and is generally titled *Spanish* Potatoo; these Roots are annually imported from *Spain and Portugal*, where they are greatly cultivated for the Table, but they are too tender to thrive well in the open Air in *England*, they are cultivated by the Roots in the same Way as the common Potatoo, but require much more Room; for these send out many trailing Stalks, which extend 4 or 5 Feet every Way, and at their Joints send out Roots, which, in warm Countries, grow to be large Tubers, so that from a single Root planted, 40 or 50 large Roots are produced. This Plant is propagated by way of Curiosity in *England*; the Roots should be planted on a hot Bed in Spring, and if the Plants are kept covered in bad Weather with Glasses, they will produce Flowers, and many small Roots will be produced from the Joints; but if they are exposed to the open Air, they seldom make much Progress.

The 8th Sort grows naturally at *La Vera Cruz*, from whence the Seeds were sent me; this rises with a strong winding Stalk, to the Height of 20 Feet, dividing into several smaller, which fasten themselves about any of the neighbouring Trees and Shrubs; these are garnished with Leaves in Shape of a Hand, having seven Lobes,

which are Spear-shaped, and deeply cut on their Borders, ending in sharp Points. The Flowers are single on each Foot Stalk, which are very long. The Empalement is large, spreading open, and divided deeply into 5 Parts. The Flowers are large, of a purple Colour, and are succeeded by large roundish Seed Vessels, having 3 Cells, in each of these is lodged a single Seed.

This Plant is tender, so the Seeds should be sown on a hot Bed in Spring, and when the Plants are fit to remove, they must be transplanted each into a Pot filled with light Earth, and plunged in a moderate hot Bed, observing to shade them from the Sun till they have taken new Root, then they should have a large Share of Air admitted every Day, to prevent their drawing weak, and moderate Waterings 3 or 4 Times a Week. When the Plants are grown too tall to remain in the hot Bed, they must be shifted into larger Pots, and placed in the Bark Stove, where, if they are allowed Room, they will rise to a great Height, and produce Flowers, but it rarely produces Seeds in *England*.

The 9th Sort is an annual Plant; the Seeds of this were sent me from *Carthage*, in *New Spain*, where the Plant grows naturally. This rises with a twining slender Stalk, ten Feet high, which is garnished with Arrow-pointed Leaves, whose Ears at the Base are rounded. The Flowers are produced in small Clusters, standing on long Foot Stalks; these are yellow, and are succeeded by three cornered Seed Vessels, having 3 Cells, in each of these are lodged two Seeds.

This Plant is annual, and too tender to thrive in the open Air in *England*, so the Seeds should be sown on a hot Bed in Spring, and the Plants may be afterward treated in the same Way as the 8th Sort, with which Management they will flower, and produce ripe Seeds.

The Seeds of the 10th Sort were sent me from *Jamaica*, where the Plants grow naturally in great Plenty. This is an annual Plant, rising with slender, stiff, twining Stalks, 8 or 9 Feet high, garnished with Heart-shaped Leaves, which are downy. The Flowers stand many together at the End of strong Foot Stalks; these are purple, and are succeeded by roundish Seed Vessels with 3 Cells, containing several small Seeds.

This Sort requires the same Treatment as the 8th, being too tender to thrive in this Country in the open Air.

The 11th Sort was sent me from the Island of *Barbuda*. This is an annual Plant, which rises with twining Stalks, 7 or 8 Feet high, garnished with oblong, oval, smooth Leaves. The Flowers come out at every Joint on slender long Foot Stalks, each supporting a large purple Flower, whose Empalement is cut almost to the Bottom, in ten Parts. The Seeds and Capsule are like those of the other Species. This is tender, so must be treated as the 8th Sort.

The 12th Sort grows naturally at *Carthage*, in *New Spain*, from whence I received the Seeds; this is a perennial Plant, which rises with strong winding Stalks, to the Height of 12 or 14 Feet, garnished with Leaves divided into 5 Lobes, standing on short Foot Stalks; the Flowers stand on long Foot Stalks, each sustaining 2 purple Flowers. The Stalks, Leaves, and every Part of the Plant is closely covered with pungent stinging Hairs of a light brown Colour. This also is tender, so must be treated as the eighth.

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The 13th Sort grows naturally about *Tolu*, in *New Spain*, from whence the Seeds were sent me; this hath a ligneous Stalk covered with a purple Bark, which twines about the Trees, and rises to the Height of 30 Feet or more, and is garnished with Leaves deeply divided into 5 sharp pointed Lobes. The Flowers stand on long thick Foot Stalks, which have a Knee in the Middle; they are very large and of a purple Colour; these are succeeded by round Seed Vessels as large as a middling Apple, divided into 3 Cells, each containing 2 very large smooth Seeds.

This Plant is too tender to thrive in the open Air in *England*, so must be treated as the 8th Sort, but it grows too tall for the Stoves. I have had these Plants upward of 20 Feet high, which have sent out many Side Branches, extending so wide, as to cover most of the neighbouring Plants, so was obliged to remove them into a cooler Situation, where they would not thrive.

The 14th Sort grows naturally on the Sea Shores in most of the Islands in the *West-Indies*, where the Stalks trail on the Ground, which are garnished with oval Leaves, indented at the Top. The Flowers are large, of a purple Colour, and are produced by Threes, on very long Foot Stalks; these are succeeded by large oval Seed Vessels, with 3 Cells, each containing a single Seed; this hath a perennial Stalk, which trails on the Ground, and spreads to a great Distance, but is too tender to thrive in the open Air in *England*, so must be treated as the 8th Sort, and may be continued 2 or 3 Years in a warm Stove, but it is apt to spread too far for a small Stove, so that where there is not great Room, it is not worthy of Culture.

The 15th Sort grows naturally in *Jamaica*; this rises with slender winding Stalks, 8 or 10 Feet high; the Leaves of these are shaped a little like those of the common great white *Convolvulus*, but the Foot Stalks, which are pretty long, do each sustain many purple Flowers, growing in Bunches. The Seed Vessels of this Sort are 3 cornered, and have 3 Cells, each containing a single Seed. This is an annual Plant, which requires a hot Bed to raise it, and must be kept in a Glass Case, or a Stove, otherwise the Seeds will not ripen here.

The 16th Sort has been long preserved in several curious Gardens in *England*. It grows naturally in the *Canary* Islands; this hath a strong fibrous Root, from which arise several twining woody Stalks, dividing into many smaller; these, where they have Support, will grow more than 20 Feet high, and are garnished with oblong Heart-shaped Leaves, which are soft and hairy. The Flowers are produced from the Wings of the Leaves, several standing upon one Foot Stalk; these are for the most part of a pale blue, but there is a Variety of it with white Flowers. This Plant flowers in *June*, *July*, and *August*, and sometimes ripens Seeds here; but as the Plants are easily propagated by Layers, and from Cuttings, the Seeds are not so much regarded, nor indeed will those Plants which are raised by Layers, or Cuttings, produce Seeds, though those which come from Seeds seldom fail. As the Leaves of this Plant continue green all the Year, they make a pretty Variety in Winter in the Green-house, for it will not live abroad in Winter in this Country, though it only requires the

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same Protection as Myrtles, and other hardy Green-house Plants. It may be propagated by laying down the young Shoots in Spring, which generally put out Roots in 3 or 4 Months, then they may be taken from the old Plants, and each planted in a Pot filled with light Earth, and placed in the Shade till they have taken new Root, after which they may be placed with other hardy Green-house Plants till Autumn, when they should be removed into the Green-house, and afterward treated as Myrtles, and other Green-house Plants. If the tender Cuttings of this are planted during any of the Summer Months, in Pots filled with light Earth, and plunged into a moderate hot Bed, shading them from the Sun, they will take Root, and afterward should be treated as the Layers.

The 17th Sort is an annual Plant the Seeds of it were sent me from *Jamaica*, where it grows naturally; this rises with a very slender twining Stalk, 4 or 5 Feet high, garnished with triangular Leaves, which are pointed. The Flowers grow in Clusters, sitting close to the Stalks, which are blue, and are succeeded by Seeds, like those of the 4th Sort. This Sort will not ripen Seeds in *England*, unless the Plants are brought forward on a hot Bed in the Spring, and afterward placed in a Glass Case, where they may be defended from Cold.

The 18th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me. This is one of the most beautiful Kinds, the Flowers being very large, and of a fine Rose Colour. It rises with a winding Stalk, 7 or 8 Feet high, which is garnished with Heart-shaped Leaves, ending in long sharp Points, sitting upon very long Foot Stalks. The Flowers also have long Foot Stalks, each supporting 2 Flowers, whose Empalement is divided deeply into 5 Parts; the Seeds are large, and covered with a fine Down. This is an annual Plant, which is too tender to thrive in the open Air in this Country, so the Seeds should be sown on a hot Bed in Spring, and the Plants afterward treated as directed for the 8th Sort.

The 19th Sort grows naturally near the Sea at *Campachy*, from whence I received the Seeds; this hath strong, smooth, winding Stalks, which send out Roots at their Joints; these are garnished with Arrow-pointed Leaves, whose Ears (or Lobes) are obtuse; the Flowers are large, of a Sulphur Colour, and sit upon very long Foot Stalks, which proceed from the Side of the Stalks, each supporting one Flower, with a large swelling Empalement; these are succeeded by large, smooth, oval Capsules, having 3 Cells, each including one large smooth Seed. This is a perennial Plant, whose Stalks extend to a great Distance, and put out Roots at the Joints, whereby it propagates in Plenty, but is too tender to thrive in *England*, unless preserved in a warm Stove, where it requires more Room, than can well be allowed to one Plant. It must be treated as the 8th Sort.

The 20th Sort grows naturally in *Africa*, from whence the Seeds were sent to the Royal Garden at *Paris*, and from whence I received it in 1730; this rises with a slender winding Stalk, 5 or 6 Feet high, garnished with Heart-shaped Arrow-pointed Leaves, the Flowers stand on long slender Foot Stalks; these are white, with purple Bottoms. This Sort may be treated in the same Manner as the common great *Convolvulus*.

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This 21st Sort grows naturally in *Spain* and *Italy*; this is an annual Plant, rising about 2 Feet high, with slender twining Stalks, garnished with oval Leaves. The Flowers are small, and of a bluish Colour, each Foot Stalk supporting one Flower of little Beauty, so is not often cultivated in Gardens. If the Seeds are permitted to scatter, the Plants will rise in Spring, and require no Culture but to keep them clean from Weeds; or if they are sown in Spring where the Plants are to remain, they will flower in *June*, and the Seeds ripen in *August*.

The 22d Sort grows naturally in *Sicily*, and the Islands of the *Archipelago*; this hath a perennial Root, which sends out many slender stiff Stalks, twisting themselves round the neighbouring Plants, and rise 5 or 6 Feet high; these are garnished with Leaves divided into 5 or 7 narrow Lobes, and are of a soft Texture, like Sattin, standing on short Foot Stalks. The Flowers are produced from the Side of the Stalks, upon long Foot Stalks, which sustain 2 Flowers of a pale Rose Colour, with 5 Stripes of a deeper red. This Sort creeps at the Root, so seldom produces Seeds in *England*, but is propagated by the Shoots taken from the old Plants; the best Time for parting and transplanting these Plants, is about the Beginning of *May*, when they may be taken out of the Green-house, and exposed in the open Air; but the young Plants which are separated from the old ones, should be placed under a Frame, and shaded from the Sun till they have taken new Root, after which they must be gradually hardened to bear the open Air, to which they must be exposed all the Summer; but in Autumn they must be placed in the Green-house, and treated as the *Canary Convolvulus* before-mentioned.

The 23d Sort hath some Appearance of the 22d, and hath been supposed to be the same Species by some Writers, but I have cultivated both many Years, and never have found either of them alter, so make no Doubt of their being distinct Plants. This Sort hath a perennial Root like the former, which sends out many weak twining Stalks, rising about 3 Feet high, twisting about the Plants which stand near it, or about each other, and if they have no other Support, fall to the Ground; these are garnished with Leaves of different Forms, some are shaped almost like those of Betony, being slightly cut on their Edges, others are almost Heart-shaped, and are deeply cut on the Sides, and some are cut to the Mid-rib; they have a shining Appearance like Sattin, and are soft to the Touch, standing on short Foot Stalks. The Flowers are produced on the opposite Side from the Leaves, having very long Foot Stalks, each sustaining 2 Flowers of a pale Rose Colour, very like those of the former Species. It flowers in *June*, *July*, and *August*, but rarely ripens Seeds in *England*. It hath a perennial Root, which sends out Offsets, by which it is propagated in *England* as the last mentioned, and the Plants treated the same Way.

The 24th Sort grows naturally in *Portugal*, but hath been long cultivated in the Flower Gardens in *England* for Ornament; this is titled *Convolvulus Minor*, by the Seedsmen and Gardeners. It is an annual Plant, which hath several thick herbaceous Stalks, growing about 2 Feet long, which do not twine like the other Sorts, but decline toward the Ground, upon which many of the lower Branches lie prostrate; these are garnished with

Spear-shaped Leaves, which sit close to the Branches; the Foot Stalks of the Flowers come out just above the Leaves at the same Joint, and on the same Side of the Stalks; these are about 2 Inches long, each sustaining one large open Bell-shaped Flower, which in some is of a fine blue Colour, with a white Bottom; in others they are pure white, and some are beautifully variegated with both Colours. The white Flowers are succeeded by white Seeds, and the blue by dark coloured Seeds, and this Difference is pretty constant in both; but those Plants with variegated Flowers, have frequently plain Flowers of both Colours, intermixed with the striped, therefore the only Method to continue the variegated Sort, is to pull off all the plain Flowers when they appear, never suffering any of them to remain for Seed.

This Sort is propagated by Seeds, which should be sown on the Borders of the Flower Garden, where they are designed to remain. The usual Method is to put two or three Seeds in each Place, where they are intended to flower, covering them half an Inch with Earth; and when the Plants come up, if the Seeds all grow, there should be but two left in each Place, which will be sufficient, the others should be drawn out carefully, so as not to disturb the Roots of those which are left. After which they will require no other Culture, but to keep them clean from Weeds. If the Seeds are sown in Autumn, the Plants will flower in *May*, but those sown in Spring, will not flower till about the Middle of *June*, and will continue flowering till the Frost stops them. The Seeds ripen in *August* and *September*.

The 25th Sort grows naturally in *Italy* and *Sicily*; this hath a perennial Root, which runs deep in the Ground, from which arise 2 or 3 upright branching Stalks, near 3 Feet high, garnished with narrow Leaves about 2 Inches long, which sit close to the Stalks; the Foot Stalks of the Flower proceed from the same Place, these are 4 or 5 Inches long, each sustaining 4 or 5 Flowers, of a pale Rose Colour, which spread open almost flat. This flowers in *June* and *July*, but seldom produces good Seeds in *England*. It is propagated by Seeds, which must be obtained from the Countries where it naturally grows; these should be sown upon a warm dry Border, where they are designed to remain: For as the Plants run down with long tap Roots, they will not bear transplanting, for I have often made Trial of this, without any Success. When the Plants come up, they should be thinned where they grow too close, and constantly kept clean from Weeds, which is all the Culture they require. It flowers in *July* and *August*, and the Stalks decay in Autumn; but the Roots will last several Years, and if they are in a dry Soil and warm Situation, will abide the Winter very well without covering. I have received a Variety of this from *Nice*, where it grows naturally, with broader Leaves, which are hairy. The Flowers are placed all toward the Top of the Stalk, upon long Foot Stalks, growing many together very closely joined: But I cannot be sure if it is not a seminal Variation, for it was sent me by the same Title.

The 26th Sort grows naturally in *France*; this hath a perennial creeping Root, from which arise several short branching Stalks, about 4 Inches high, garnished with Spear-shaped silky Leaves; the Flowers are produced on the Side, and at the Top of the Stalks, in small Clusters, sitting.

sitting close together; these are much smaller than those of the former Sort, but are of a deeper Rose Colour: This seldom produces Seeds in *England*, but the Roots propagate in Plenty. It delights in a light dry Soil, and requires no Care but to keep the Plants clean from Weeds, it may be transplanted either in the Spring or Autumn. This is by some supposed the same as the last Sort, but whoever has cultivated them, can have no Doubt of their being different Species.

The 27th Sort grows naturally in *Italy*, *Sicily*, and the Islands in the *Archipelago*; it rises with upright shrubby Stalks about 3 Feet high, closely garnished with blunt Spear-shaped silky Leaves, placed on every Side the Stalks, they are near two Inches long, and a Quarter broad, rounding at their Ends. The Flowers are produced in Clusters at the Top of the Stalks, sitting very close, they are of a pale Rose Colour, and come out in *June* and *July*, but do not perfect Seeds in *England*: This Plant will live in the open Air in mild Winters, if planted in a light Soil, and warm Situation; but in hard Winters it is destroyed; therefore the Plants should be kept in Pots, and sheltered under a common Frame in Winter, where it may enjoy the free Air in mild Weather, and be protected from the Frost, and in Summer placed abroad with other hardy exotick Plants, where it's fine silky Leaves, will make a pretty Appearance. It may be propagated by laying down the Branches, also by Cuttings, but both very seldom put out Roots the same Year, and many of them will fail, so the best Way is to procure the Seeds from *Italy*, for those Plants which come from Seeds, grow much larger than those from Layers or Cuttings.

The 28th Sort grows naturally in *Candia*, and several Islands of the *Archipelago*; this hath a perennial Root, which sends up several erect branching Stalks about 2 Feet high, garnished with very narrow pointed Leaves, sitting close to the Stalks, which are hoary. The Flowers come out singly on the Side of the Stalks sitting very close, having scarce any Foot Stalks, these are of a very pale bluish Colour, and spread open almost to the Bottom. It flowers in *June* and *July*, but rarely produces Seeds in *England*.

This Sort is propagated as the 25th, and the Plants require the same Treatment. This must have a dry Soil and warm Situation, otherwise it will not live through the Winter in the open Air in *England*. As the Stalks decay in Autumn, if the Surface of the Ground about their Roots is covered with some old Tanners Bark, it will preserve them in the hardest Frosts.

The 29th Sort grows naturally in both *Indies*; this is an annual Plant, which sends out several weak Stalks from the Root, inclining to the Ground, garnished with oval Leaves, sitting close to the Stalks, they are about the Size of Chickweed Leaves, but are hairy, and are placed alternate on the Branches, the Flowers are small, of a light blue, two growing on each Foot Stalk, these are succeeded by small round Capsules divided into 3 Cells, which contain the Seeds; it flowers in *July* and *August*, and the Seeds ripen in Autumn.

This Sort is very tender, so the Seeds should be sown on a hot Bed in Spring, and when fit to remove, should be each transplanted into a small Pot and plunged in a hot Bed, observing to screen them from the Sun till they

have taken fresh Root; after which they must be treated as the other tender Sorts.

The 30th Sort is used in Medicine, and is styled *Sis-danella*, and *Brassica marina*; it grows naturally on the Sea Beaches in many Parts of *England*, but cannot be long preserved in a Garden. This hath many small white stringy Roots, which spread wide and send out several weak trailing Branches, which twine about the neighbouring Plants like the common Bindweed; they are garnished with Kidney-shaped Leaves, about the Size of those of the lesser *Celandine*, standing upon long Foot Stalks, and placed alternate. The Flowers are produced on the Side of the Branches, at each Joint. These are shaped like those of the 1st Sort, and are of a reddish purple Colour, they appear in *July*, and are succeeded by round Capsules having three Cells, each containing one black Seed; every Part of the Plant, abounds with a milky Juice. This is esteemed a good Medicine to purge off watery Humours, and is prescribed in Dropsies.

The 31st Sort grows naturally in the Island of *Ceylon*; this is a perennial Plant, having thick fleshy Roots, which spread far in the Ground, and abound with a milky Juice, which flows out when the Roots are broken or wounded, and soon hardens into a resinous Substance, when exposed to the Sun and Air. From the Root shoots forth many twining Branches, which twist about the neighbouring Plants. These are garnished with Heart-shaped Leaves, soft to the Touch, like those of the Marsh Mallow. The Flowers are produced at the Joints on the Side of the Stalks, several standing together on the same Foot Stalk; they are white, and shaped like those of the common great Bindweed. These are succeeded by round Capsules, having three Cells, which contain two Seeds in each.

The Roots of this Plant, which is the only Part used in Medicine, are brought to us from *India*. It is titled *Turpetbum*, or *Turbitb* in the Shops.

This Plant is tender, so will not live in the open Air in *England*; it is propagated by Seeds, sown on a hot Bed; and when the Plants are fit to remove, they should be each planted in a Pot, and plunged into a hot Bed of Tanners Bark, and screened from the Sun, till they have taken fresh Root, and afterward must be treated as hath been directed for the 8th Sort.

The 32d Sort is the *Jalap* which is used in Medicine. This grows naturally at *Haleppo*, in the *Spanish West-Indies*, situated between *La Vera Cruz* and *Mexico*. The Root of this Plant hath been long used in Medicine, but it was not certainly known, what Plant was produced from it. The old Title of this was *Mecboacana nigra*, but Father *Plumier* asserted that it was the Root of one Species of *Marvel* of *Peru*, from whence *Tournefort*, was induced to constitute a Genus of that Plant under the Title of *Jalapa*. But Mr. *Ray*, from better Information, put it among the *Convulsi*, and titled it, *Convulvulus Americanus*, *Jalapium dictus*. This was by the late Dr. *Houssoun*, certainly ascertained, who brought some of the Roots of this Plant, from the *Spanish West-Indies* to *Jamaica*, where he planted them, with a Design of cultivating the Plants in that Island, where he observed them to thrive, during his abode there: But soon after he left the Country, the Person to whose Care he committed them, was so careless, as to suffer Hogs to root them out of the Ground, and destroy them, so that

that there were no Remains of them left, when he returned there; nor have I heard of this Plant being introduced into any of the *British* Islands since.

A few Years past I received the Seeds of this Plant, which have succeeded in the *Chelsea* Garden, where the Plants thrive very well, but have not as yet produced any Flowers. This hath a large Root of an oval Form, which is full of a milky Juice; from which come out many herbaceous twining Stalks, rising 8 or 10 Feet high, garnished with variable Leaves, some being Heart-shaped, others angular, and some oblong, and pointed. They are smooth, and stand upon long Foot Stalks; and from a Drawing of the Plant, made by a *Spaniard* in the Country, where it grows naturally; who gave it to Dr. *Houssain*, and is now in my Possession; the Flowers are shaped like those of the common Great Bindweed, each Foot Stalk supporting one Flower. As it is only a Pencil Drawing, the Colour is not expressed; therefore I can give no farther Account of it, till the Plants in the *Chelsea* Garden flower, which may be soon expected, as they are very strong. The Seeds are covered with very white Down like Cotton.

As this Plant is a Native of a warm Country, it will not thrive in *England*, unless preserved in a warm Stove; therefore the Seeds must be sown on a hot Bed, and the Plants put into Pots, and plunged in a hot Bed of Tanners Bark, and treated as the 8th Sort, with this Difference only: That as this hath large fleshy succulent Roots, they should have but little Water given them, especially in Winter, lest it cause them to rot. They should be planted in light sandy Earth not too rich, for the same Reason; and the Plants should always remain in the Bark Stove.

The Root of Jalap is esteemed an excellent Cathartic Medicine, purging serous, watry Humours especially, and is of singular Service in Dropsies, and for Rheumatic Disorders. The Quantity of the Root which is used in Medicine, is not sufficient to render the Introduction of this Plant into the *British* Colonies, a Matter of great Concern. But since the Distillers and Brewers, have found out its Use for exciting a Fermentation; the Consumption of it is now so great, that it would become a national Benefit, if produced in the *British* Islands; which might be soon effected were the Inhabitants of those Islands, a little more attentive to their own, and the public Benefit.

CONYZA. *Lin. Gen. Plant.* 854. *Tourn. Inst. R. H.* 454. *Tad.* 259. Flea-bane in *French* Conise.

The Characters are,

It hath a compound Flower, made up of many hermaphrodite Florets, which compose the Disk; and female half Florets ranged round the Border, and form the Rays; the hermaphrodite Florets are Funnel-shaped; and cut into five Parts at the Brim, which spread open, these have each five short hairy Stamina, terminated by cylindrical Summits; in the Bottom of each Floret is situated a Germen supporting a slender Style, crowned by a bifid Stigma. The female half Florets or Rays, are Funnel-shaped, and cut into 3 Parts at the Top; these have a Germen, with a slender Style, terminated by two slender Stigmas but have no Stamina. All these are included in a common scaly Empalement, which is oblong and square; the Scales are pointed,

and the outer ones spread open. The hermaphrodite and female Florets, are each succeeded by one oblong Seed, crowned with Down, sitting upon a plain Receptacle, and are included in the Empalement.

The Species are,

1. CONYZA foliis lanceolatis acutis, caule annuo corymboso. *Hort. Cliff.* 405. Flea-bane with pointed Spear-shaped Leaves, and an annual Stalk, and Flowers growing in roundish Bunches. This is the *Conyza major vulgaris*. *C. B. P.* 265. Common greater Flea-bane.

2. CONYZA foliis ovato oblongis, amplexicaulis. *Hort. Cliff.* 405. Flea-bane with oblong oval Leaves embracing the Stalks. *Conyza Pyrenaica, primula veris folio*. *Par. Bat.* 127. *Pyrenian* Flea-bane with a Primrose Leaf.

3. CONYZA foliis ovatis tomentosis, floribus confertis, pedunculis lateralibus terminalibusque. *Hort. Cliff.* 405. Flea-bane with oval woolly Leaves, Flowers growing in Clusters, and Foot Stalks proceeding from the Sides and terminating the Stalks. This is the *Conyza Cretica fruticosa*. *Tourn. Cor.* 33. Shrubby Flea-bane of *Crete*, with soft woolly Leaves, which are very white.

4. CONYZA foliis hastatis scabris, caule erecto, ramoso, perenni, floribus corymbosis. Flea-bane with Halbert-pointed rough Leaves, an upright branching perennial Stalk, and Flowers growing in round Bunches. This is the *Conyza arborescens lutea, folio trifido*. *Plum. Cat.* 9. Yellow Tree-like Flea-bane with a trifid Leaf.

5. CONYZA arborescens, tomentosa, foliis oblongis, floribus in summitatibus racemorum, ramosis sparsis albican- tibus. *Houss. Mss.* Woolly Tree Flea-bane with oblong Leaves, Flowers at the End of the Branches, which are whitish and grow in loose Bunches.

6. CONYZA foliis linearibus decurrentibus serratis, floribus corymbosis terminalibus. Flea-bane with narrow running Leaves, and Flowers in round Bunches terminating the Stalks. This is the *Conyza herbacea, Salicis folio, floribus umbellatis purpureis minoribus*. *Houss. Mss.* Herbaceous Flea-bane with a winged Stalk a Willow Leaf, and smaller purple Flowers growing in Umbels.

7. CONYZA arborescens, foliis oblongis, floribus singulis tribus stoculis constantibus. *Houss. Mss.* Tree Flea-bane with oblong Leaves, and each Flower constantly composed of three Florets.

8. CONYZA caule herbaceo, foliis ovatis serratis, vil- lulis, floribus alaribus & terminalibus. Flea-bane with an herbaceous Stalk, oval, sawed, hairy Leaves, and Flow- ers proceeding from the Sides, and at the End of the Branches. This is the *Conyza odorata, Bellidis folio vil- losa & viscosa*. *Houss. Mss.* Sweet smelling Flea-bane, with a Daisy Leaf, which is viscous and hairy.

9. CONYZA fruticosa, flore pallide purpureo, capitulis & lateribus ramulorum spicatum exeuntibus. *Sloan. Cat.* *Jam.* 124. Shrubby Flea-bane with a pale purple Flower growing in Spikes from the Side and Top of the Branches.

10. CONYZA foliis oblonga ovatis scabris, floribus ra- cemosis terminalibus, caule herbaceo. Flea-bane with ob- long, oval, rough Leaves, Flowers growing in Bunches at the Ends of the Branches and an herbaceous Stalk. This is the *Conyza Symphyti facie, flore luteo*. *Houss. Mss.* Flea-bane with a Comfrey Leaf and a yellow Flower.

11. CONYZA Americana scandens, Lauri folia aspera, quibusque terminalibus are T. & antennis hary p. ribus

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floribus spicatis albis. Houst. Mss. American Climbing Flea-bane with a rough Bay Leaf, and white Flowers growing in Spikes.

12. *CONYZA Americana frutescens, foliis ovatis trinerviis & integris, floribus spicatis albis. Houst. Mss.* Shrubby American Flea-bane, with oval entire Leaves having three Nerves and white Flowers in Spikes.

13. *CONYZA Americana frutescens foliis oblongis acutis, capitulis & ramulorum exsertibus, calycibus purpurascens. Houst. Mss.* Shrubby American Flea-bane, with oblong-pointed Leaves, Heads growing on the Side of the Branches, with purple Cups.

14. *CONYZA fruticosa foliis ovatis trinerviis, floribus spicatis alaribus.* Shrubby Flea-bane with oval Leaves having three Nerves, and Flowers growing in Spikes from the Side of the Branches.

15. *CONYZA foliis ovato lanceolatis trinerviis, pedunculis longissimis terminalibus floribus corymbosis.* Flea-bane with oval Spear-shaped Leaves, having three Veins, Foot Stalks which are very long, terminating the Branches, and Flowers growing in round Bunches.

16. *CONYZA foliis ovato oblongis, obtusis serratis, semiamplexicaulibus, floribus corymbosis terminalibus.* Flea-bane with oblong oval Leaves, which are obtuse and sawed, half embracing the Stalks with their Base, and Flowers in round Bunches terminating the Stalks. This is the *Eupatorium Conyzoides Sinica Baccharidis folio rarius crenato, summo caule ramoso, floribus parvis coronato. Pluk. Amath. 80.* China Hemp Agrimony like Flea-bane, with a Ploughman's Spikenard Leaf rarely crenated, the upper Part of the Stalk branching, and crowned with small Flowers.

17. *CONYZA major odorata sive Baccharis, floribus purpureis nudis. Sloan. Cat. Jam. 121.* Greater sweet scented Flea-bane or Baccharis, with naked purple Flowers.

The 1st Sort grows naturally upon dry Places in several Parts of England. This is a biennial Plant, which decays soon after the Seeds are ripe; it hath several large oblong pointed Leaves, growing near the Ground, which are hairy, between these, the Stalks come out, which rise more than 2 Feet high, which divide upward into several Branches. These are garnished with smaller oblong Leaves, standing alternate; at the Ends of the Stalks, the Flowers are produced in round Bunches, which are of a dirty yellow Colour, these are succeeded by oblong Seeds, crowned with Down. It flowers in July, and the Seeds ripen in Autumn. If the Seeds are permitted to scatter, the Plants will come up the following Spring, and require no other Care but to keep them clean from Weeds.

The 2d Sort grows naturally on the Mountains in Italy, and is preserved in Botanick Gardens for Variety. This hath a perennial Root but an annual Stalk, which decays every Autumn. From a thick fibrous Root, arise many upright Stalks, garnished with oblong, oval Leaves, which are rough, and embrace the Stalks with their Base, these have Appendages running along the Stalk, from one to the other, whereby the Stalk is winged. The upper Part of the Stalk divides into many smaller Branches, garnished with Leaves of the same Form, but smaller, standing alternate; the Branches and main Stalks are terminated by yellow Flowers growing in round Bunches; these are succeeded by oblong

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Seeds crowned with Down. It flowers in July, and the Seeds ripen in Autumn. This is propagated by Seeds, which may be sown on a Bed of light Earth in Spring, and when the Plants come up, they should be thinned where they are too near, and kept clean from Weeds; the following Autumn, they may be transplanted where they are designed to remain, and require no other Care but to keep them clean from Weeds. The 2d Year they will flower and produce ripe Seeds, and continue several Years if the Soil is not too good, for they often rot, when planted in a rich Soil.

The 3d grows naturally in Crete. This hath a short shrubby Stalk, which in this Country seldom rises more than six Inches high, dividing into several short Branches, closely garnished with oval woolly Leaves, which are very white; from these Branches arise the Flower Stalks, which are woolly and rise about nine Inches high, garnished with small oval white Leaves placed alternate. The Flowers are produced at the Sides, and End of the Stalk, sometimes but one, at other Times two, and sometimes three Flowers standing on the same Foot Stalk. They are of a dirty yellow Colour, and appear in July, but rarely are succeeded by Seeds, so the Plant is propagated here by Slips, which, if taken from the old Plants in June, and planted on an East aspected Border, and covered with Hand Glasses, will take Root in 6 or 8 Weeks. But these Slips must be frequently, but gently refreshed with Water, and the Glasses should be shaded in hot Weather, and after they have been planted a Fortnight, the Glasses should be raised on one Side to admit Air to the Cuttings; when they have taken Root, they should be gradually exposed to the open Air. In Autumn these should be carefully taken up, preserving the Earth to their Roots, some of them may be planted in Pots, that they may be sheltered under a Frame in Winter; and others may be planted in a warm Border of dry, poor Earth, where they will endure the Cold of our ordinary Winters very well, and continue many Years. This is preserved in Gardens, more for the Beauty of its silvery Leaves, than its Flowers, which have not much to recommend them.

The 4th Sort grows naturally in Jamaica. This is titled, by Sir Hans Sloane, *Virga aurea major, s. Herba Doria folio sinuato bifido. Cat. Jam. 125.* This rises with a shrubby Stalk, 7 or 8 Feet high, dividing into several Branches, clothed with rough Leaves, shaped like the Point of a Halbert, and are about four Inches long. The Flowers are produced in roundish Bunches, at the Extremity of the Branches; they are yellow, and stand close together. These are succeeded by oblong Seeds crowned with Down.

This Plant is too tender to thrive in the open Air in this Country, therefore the Seeds must be sown upon a hot Bed, and when the Plants are fit to remove, they must be each transplanted into a small Pot filled with light sandy Earth, and plunged into a hot Bed, observing to screen them from the Sun till they have taken new Root, then they must have free Air admitted every Day, in Proportion to the Warmth of the Season; they must also be frequently watered in warm Weather, but they should not have it in too great Plenty. As the Plants advance in Strength, they must have a greater Share of Air; and if the Season is warm, they may be exposed to the

the open Air, for a few Weeks in the Heat of Summer, provided they are placed in a warm Situation; but if the Nights prove cold, or much Wet should fall, they must be removed into Shelter; if these Plants are placed in a moderate Stove in Winter, they will thrive better, than in greater Heat, and in Summer they should have a large Share of Air. With this Management I have had the Plants flower well in *July*, though they have not perfected Seeds here.

The 5th Sort rises with a woody Stalk 10 or 12 Feet high, dividing into many Branches, whose Bark is covered with a brown Down; these are garnished with oblong, oval Leaves, green on their upper Side, but of an Ash Colour on their under Side, placed alternate on short Foot Stalks. The Flowers are produced at the End of the Branches, on long branching Foot Stalks, in loose Spikes ranged on one Side; they are white, and succeeded by long flat Seeds crowned with Down. This Plant grows naturally at *La Vera Cruz* in *New Spain*. It is a tender Plant, so must be treated as hath been directed for the former Sort.

The 6th Sort grows naturally at *La Vera Cruz*. This hath a perennial Root, from which arise several upright Stalks 3 Feet high, garnished with long narrow Leaves, sawed on their Edges, placed alternate, and have Appendages which run along the Stalk from one to the other, forming a Border or Wing to the Stalks. The Flowers are produced at the Ends of the Stalks, in round Bunches, they are small, of a purple Colour, and are succeeded by oblong flat Seeds, crowned with a Down. This is propagated by Seeds which must be sown upon a hot Bed in Spring, and the Plants must be transplanted into Pots, and plunged in a fresh hot Bed, observing to screen them from the Sun till they have taken fresh Root, after which, they must have a large Share of Air, and about Midsummer, they may be placed in the open Air in a sheltered Situation, where they may remain till the End of *September*, when they should be removed into the Stove, and during the Winter kept in a temperate Degree of Warmth. The 2d Year these Plants will flower, but they do not perfect Seeds in *England*.

The 7th Sort was sent me from *La Vera Cruz*. This hath a strong woody Stem, which rises to the Height of 14 or 16 Feet, covered with an Ash coloured Bark, and is divided upward into many ligneous Branches, garnished with Spear-shaped Leaves standing alternate on short Foot Stalks. These Branches are terminated by roundish Bunches of white Flowers, sitting on long Foot Stalks, several of them being joined on the same Foot Stalk. As these are not succeeded by Seeds in *England*; the Seeds must be procured from abroad, and these must be sown on a hot Bed, and the Plants afterward treated as the 4th Sort.

The 8th Sort grows naturally at *La Vera Cruz*; this is an annual Plant, which grows in low moist Places, where the Water stands in Winter; it hath an herbaceous, branching Stalk, which rises about one Foot high, garnished at each Joint, with one oval Leaf, sitting close to the Branches; these are sawed on their Edges, and covered with a white, hairy Down. The Flowers are produced from the Side of the Branches, on slender Foot Stalks, each for the most part sustaining three Flowers, which are white, and are succeeded by chaffy Seeds,

crowned with Down; the whole Plant is viscous, and will stick to the Fingers of those who handle it.

The Seeds of this must be sown on a hot Bed in Spring, and when the Plants are fit to remove, they should be each transplanted in a Pot, and plunged into a fresh hot Bed, and treated as the other tender Sorts, but must have a large Share of Air in warm Weather, and frequently refreshed with Water. In *July* these Plants will flower, and if the Autumn proves favourable, they will ripen their Seeds; a Plant or two of this Sort may be preserved for Variety, but there is little Beauty in it.

The 9th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me; this rises with a shrubby Stalk, 6 or 7 Feet high, dividing into many ligneous Branches, which have a mealy Bark, and are garnished with Spear-shaped Leaves, sitting close to the Branches; they are hairy, and of a Silver Colour on their under Side, and are placed alternate. The Flowers come out from the Side of the Branches, generally in loose Spikes, which grow horizontal, and the Flowers stand on the upper Side erect, but sometimes they come out single, sitting close between the Leaf and Branch; these are of a pale purple Colour; and are succeeded by chaffy Seeds, crowned with a Down.

This Sort is propagated by Seeds, which must be obtained from the Country where it grows naturally, for it doth not produce Seeds in *England*, though it has flowered several Years in the *Chelsea* Garden; the Seeds must be sown, and the Plants treated as the 4th Sort.

The 10th Sort grows naturally at *La Vera Cruz*; this hath a perennial Root, and an annual Stalk. It grows about 3 Feet high, the Leaves are from 4 to 5 Inches long, and one and a Half broad in the Middle, and are rough like those of Comfrey. The Stalks are terminated by branching Flower Stalks, each Foot Stalk sustaining several yellow Flowers, not much unlike those of the common Sort. This is propagated by Seeds as the 6th Sort, and the Plants must be treated in the same Way. It will flower the 2d Year, but it doth not ripen Seeds in *England*.

The 11th Sort was sent me from *La Vera Cruz*; this hath a climbing shrubby Stalk, which rises 14 or 16 Feet high, and divides into many Branches, garnished with Leaves about the Size of those of the Bay Tree, and full as thick in their Texture, having many deep transverse Nerves, running from the Mid-rib to the Sides; they are of a pale green Colour. The Flowers are produced in long Spikes, which come out from the Side of the Branches, and are reflexed, but the Flowers are ranged on the upper Side, pointing upward; these are large and white, and are succeeded by flat dark coloured Seeds, crowned with Down.

This Plant makes a fine Appearance in the Stove when in flower, and as it retains its Leaves all the Year, in the Winter Season it affords an agreeable Variety among other tender Plants. The Culture of this Plant is the same as hath been directed for the 4th Sort.

The 12th Sort was sent me from *Cartagena*, in *New Spain*, where it grows naturally; this rises with a shrubby Stalk, 6 or 7 Feet high, dividing into several ligneous Branches, garnished with oval smooth Leaves, having three longitudinal Veins, and are entire; these are placed alternate, and close to the Branches. The

Flowers are produced in short close Spikes at the End of the Branches; these are white, and are succeeded by oblong flat Seeds, crowned with Down; this Sort is tender, so must be treated as the 4th, and will abide several Years with that Management.

The 13th Sort grows naturally in the same Country as the last, this rises with a shrubby Stalk, 8 or 10 Feet high, dividing into many long slender Branches, garnished with Spear-shaped Leaves, ending in acute Points; these are about 3 Inches long, and 3 Quarters of an Inch broad in the Middle; the smaller Branches are set with very narrow, oblong, pointed Leaves, which grow close to the Stalks, and at each Joint is produced one pretty large, white Flower, with a purple Empalement; these Flowers come out the whole Length of the small Branches, sitting close to the Base of the Leaves, so that the Plants make a pretty Appearance in flower. This Sort may be propagated as the 4th, and with that Management it hath flowered very well, but doth not produce Seeds in England.

The 14th Sort was sent me from *Cartibagena* where it grows in great Plenty; this hath a strong woody Stem, rising 10 or 12 Feet high, and divides upward into many short ligneous Branches, whose Joints are very close to each other. The Leaves come out alternate on every Side the Branches, to which they sit very close; they are one Inch long, and Half an Inch Broad, ending in acute Points; these are smooth, and have 3 longitudinal Veins. The Flowers are produced in short close Spikes, which come out from the Side of the Branches; they are white, inclining to a purple, and are succeeded by oblong flat Seeds, crowned with Down. This is a tender Plant, so requires the same Treatment as the fourth Sort, with which it hath flowered very well, but hath not produced Seeds in England.

The 15th Sort rises with a shrubby Stem, 6 or 7 Feet, dividing into several Branches, which have a dark brown Bark, and are closely garnished with oval, Spear-shaped, smooth Leaves, having 3 longitudinal Veins; these have short Foot Stalks, and are placed alternate on every Side the Branches. The Flowers are produced on long naked Foot Stalks, which extend 5 or 6 Inches beyond the End of the Branches; these are purple, and form a kind of round Bunch. The Empalement of the Flower is composed of short chaffy Scales.

This grows naturally at *Campeachy*; it is tender, so must be treated as directed for the 4th Sort, with which it hath flowered, but hath not produced Seeds here.

The 16th Sort grows naturally at *Campeachy*; this rises with a shrubby Stalk 10 or 12 Feet, sending out many strong ligneous Branches, covered with a dark coloured Bark, garnished with oblong, oval, blunt Leaves, sawed on their Edges, and half embrace the Stalks with their Base. The Flowers are purple, growing in round Bunches at the End of the Branches, and are succeeded by flat Seeds crowned with Down.

This is also a tender Plant, and requires the same Treatment as the fourth Sort, with which it hath flowered, but doth not produce Seeds in England.

If the Seeds of these Plants are sown in Autumn, soon after they are ripe, there is no Danger of their miscarrying; but as these are most of them brought from abroad, they do not arrive here in good Time, so they rarely

come up the first Year; therefore the Seeds should be sown in Pots, to preserve them through the Winter, and the following Spring the Plants will come up.

The 17th Sort grows naturally in *Jamaica*; this rises with a shrubby branching Stalk, about 4 or 5 Feet high. The lower Branches and Stalk are garnished with Spear-shaped Leaves, about 4 Inches long, and one broad in the Middle; they are sawed on their Edges, and have short Foot Stalks; the Leaves on the upper Branches are much narrower, and end in acute Points. The Flowers are produced in round Bunches at the End of the Branches, which are purple, and succeeded by downy Seeds like the other Species. This is tender, and requires the same Culture as the 4th Sort.

CONSERVATORY. See Green-house.

CONVAL LILY. See *Convallaria*.

COPAIBA, the Balsam of *Capivi Tree*.

The Characters are,

It hath a Flower consisting of 5 Leaves, which expands in form of a Rose; it hath 5 short Stamina, crowned by obtuse Summits. The Pointal is fixed in the Centre of the Flower, which becomes a Pod, in which are contained one or two Seeds, surrounded with a Pulp of a yellow Colour.

We know but one Sort of this Tree, which is,

COPAIBA folio subrotundo, flore rubro. The Balsam of *Capivi*, with a roundish Leaf, and a red Flower.

This Tree grows near a Village called *Ayapel*, in the Province of *Antiochi*, in the *Spanish West-Indies*, about ten Days Journey from *Cartibagena*. There are great Numbers of these Trees in the Woods about this Village, which grow to the Height of 50 or 60 Feet; some of these do not yield any Balsam, those which do are distinguished by a Ridge which runs along their Trunks; these Trees are wounded in their Center, and they place Calabash Shells or other Vessels, to the wounded Part, to receive the Balsam, which will all flow out in a short Time. One of these Trees will yield five or six Gallons of Balsam; but though these Trees thrive well after being tapped, yet they never afford any more Balsam.

As this Balsam is used in Medicine, it deserves our Attention to procure the Trees, and cultivate them in some of the *English Colonies of America*; for as we are possessed of Lands in so many different Latitudes, they might cultivate most Kinds of Trees and Plants, from the different Parts of the World, which are useful in Medicine, Dying, or for any other Purpose of Life.

The Seeds of this Tree were brought from the Country of their Growth by Mr. *Robert Millar*, Surgeon, who sowed a Part of them in *Jamaica*, which he informed me had succeeded very well; so that we may hope to have them propagated in great Plenty in a few Years, in some of the *English Colonies*, if the Slothfulness of the Inhabitants doth not suffer them to perish, as they have the Cinnamon Tree, and some other useful Plants, which have been carried thither by curious Persons.

There are not at present any of these Trees in *Europe*, that I can learn; for those Seeds which Mr. *Millar* sent over to *England*, were all destroyed by Insects in their Passage, and not one succeeded in the several Places where they were sown; but could fresh Seeds be procured, the Plants might be raised in *England*, and preserved in the Bark Stoves very well; for the Country of their Growth is much more temperate than many others, from

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from whence we have been furnished with a great Variety of Plants, which succeed very well in the Stoves, and some arrive to a great Degree of Perfection.

CORALLODENDRON. See Erythrina.

CORCHORUS. Lin. Gen. Plant. 596. Tourn. Inst. 259. Tab. 135. Jews Mallow.

The Characters are,

The Empalement of the Flower is composed of five narrow Spear-shaped Leaves, which are erect. The Flower hath five oblong blunt Petals, which are no longer than the Empalement. It hath many hairy Stamina, which are shorter than the Petals, terminated by small Summits. In the Center is situated an oblong furrowed Germen, supporting a short thick Style, crowned by a bifid Stigma. The Germen afterward becomes a cylindrical Pod, having five Cells, which are filled with angular pointed Seeds.

The Species are,

1. CORCHORUS capsulis oblongis, ventricosus, foliorum infimis serraturis setaceis, reflexis. Lin. Jews Mallow with oblong swelling Capsules, and bristly Saws at the Base of the Leaves, which are reflexed. This is the *Corchorus* five *Melocbia*. J. B. Common Jews Mallow.

2. CORCHORUS foliis cordatis, serratis, capsulis oblongis, ventricosus, sulcatis. Jews Mallow with Heart-shaped sawed Leaves, and oblong, swelling, furrowed Capsules.

3. CORCHORUS capsulis subrotundis, depressis, rugosis. Flor. Zeyl. 214. Jews Mallow with roundish depressed Capsules, which are rough.

4. CORCHORUS flore flavo, fructu caryophylloide. Pluk. Jews Mallow with a yellow Flower, and Fruit like a Clove.

5. CORCHORUS foliis lanceolatis, serratis, capsulis linearibus, compressis, bivalvibus. Jews Mallow with Spear-shaped Leaves, which are indented like the Teeth of a Saw, and narrow, compressed, bivalvular Pods.

6. CORCHORUS foliis cordatis, serratis, capsulis linearibus, compressis, apicibus bifurcatis. Jews Mallow with Heart-shaped sawed Leaves, and narrow compressed Pods, whose Points have two Horns.

7. CORCHORUS foliis lineari-lanceolatis, serratis, capsulis linearibus, compressis, bivalvibus. Jews Mallow with narrow, Spear-shaped, sawed Leaves, and narrow compressed Capsules, with two Valves.

8. CORCHORUS affinis *Chamaedryos* foliis, flore stamineo, feminibus atris quadrangulis duplici serie dispositis. Sloan. Cat. 50. Jews Mallow with a Germander Leaf, a stameneous Flower, and four cornered black Seeds, disposed in a double Order.

The 1st Species, *Rauwolf* says, is sown in great Plenty about *Aleppo*, as a Pot Herb; the Jews boiling the Leaves to eat with their Meat; this he supposes to be the *Olus Judaicum* of *Avicenna*, and the *Corchorum* of *Pliny*. This Plant grows in the *East* and *West-Indies*, from both which Places I have received the Seeds. In the *East-Indies* the Herb is used in the same Manner as in the *Levant*, as I have been informed; but I do not hear that it is used by the Inhabitants of *America*.

This is an annual Plant, which rises about 2 Feet high, dividing into several Branches, garnished with Leaves of different Sizes and Forms, some are Spear-shaped, others oval, and some almost Heart-shaped; they are of a deep green, and slightly indented on their Edges, having near their Base 2 bristly Segments, which are reflexed. They have very long slender Foot Stalks, especially those which

grow on the lower Part of the Branches. The Flowers sit close on the opposite Side of the Branches to the Leaves, coming out singly; they are composed of 5, small, yellow Petals, and a great Number of Stamina surrounding the oblong Germen, which is situated in the Center of the Flower, and afterward turns to a rough swelling Capsule, 2 Inches long, ending in a Point, opening in 4 Cells, filled with angular greenish Seeds. This Plant flowers in *July* and *August*, and the Seeds ripen in Autumn.

The 2d Sort grows naturally in several Islands of the *West-Indies*, from whence the Seeds have been sent me; this is also an annual Plant, which rises with a strong herbaceous Stalk, 2 Feet high, divided upward into 2 or 3 Branches, garnished with Heart-shaped Leaves, sawed on their Edges, standing on long Foot Stalks, and between these are several Leaves nearly of the same Form, sitting close to the Branches. The Flowers come out singly on the Side of the Branches, as the other, which are shaped like them, and succeeded by longer swelling Pods, which are rough, and have 4 longitudinal Furrows; these open into 4 Parts at the Top, and contain 4 Rows of angular Seeds. It flowers and seeds at the same Time as the former Sort.

The 3d Sort grows naturally in both *Indies*; I have received the Seeds of this from several Parts of *India* and *America*; this is also an annual Plant, which rises with a slender herbaceous Stalk, about 3 Feet high, sending out several weak Branches, garnished at each Joint by one Leaf of an oblong Heart Shape, ending in a long acute Point, and are sawed on their Edges, standing upon short Foot Stalks, and have no small Leaves between. The Flowers come out singly on the Side of the Branches, to which they sit very close; they are smaller than those of the former Sorts, and are succeeded by short roundish Seed Vessels, which are rough, and flatted at the Top, having 6 Cells filled with small angular Seeds. This flowers and seeds at the same Time.

The 4th Sort is also a Native of both *Indies*, from whence I have received the Seeds; this is an annual Plant, which rises about 2 Feet high, dividing into small Branches, garnished with oval Heart-shaped Leaves, crenated on their Edges. The Flowers are very small, of a pale yellow, and are succeeded by swelling, rough, 4 cornered Seed Vessels, about an Inch long, flatted at Top, where are 4 Horns, which are reflexed, so that these have some Resemblance in Shape to a Clove. This flowers and seeds as the former Sorts.

The Seeds of the 5th Sort were sent me from *Cartagena*, in *New Spain*, where the Plant grows naturally; this is an annual, and rises about 3 Feet, sending out several weak Side Branches, garnished with Leaves about 3 Inches long, and 1 broad in the Middle, lessening gradually to both Ends, and indented on the Edges like the Teeth of a Saw; these sit close to the Branches. The Flowers come out singly, opposite to the Leaves; they are very small, of a pale yellow, and are succeeded by Seed Vessels near 2 Inches long, which are flat, and have 2 Cells filled with small angular Seeds. This flowers and ripens Seeds as the former.

The Seeds of the 6th Sort were sent me from *Jamaica*; this is an annual Plant, which rises with a strong herbaceous Stalk, between 3 and 4 Feet high, sending out several

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several Side Branches, which grow erect, garnished with Heart-shaped Leaves sawed on their Edges, standing on long slender Foot Stalks; between these grow many smaller Leaves nearly of the same Form, fitting close to the Branches. The Flowers come out from the Side of the Branches, on short Foot Stalks; they are very small, of a pale yellow, and are succeeded by flat Seed Vessels near 3 Inches long, ending in 2 Horns; these open in 2 Cells filled with small angular Seeds.

The Seeds of the 7th Sort were sent me from Barbadoes, where the Plant grows naturally; I have had it rise in the Earth which came over from thence in Tubs with growing Plants; this rises about the same Height as the 6th, sending out several weak Side Branches garnished with long narrow Leaves, rough, and sawed on their Edges, fitting close to the Branches; between the larger Leaves come out several small ones, placed irregularly on the Branches. The Flowers are small, of a pale yellow, and come out on the Side of the Branches, opposite to the Leaves; these are succeeded by very narrow compressed Pods, near 2 Inches long, opening with 2 Valves, and filled with small angular Seeds. It flowers and seeds at the same Time with the former.

The 8th Sort grows naturally in Jamaica; this rises with a shrubby Stalk 4 Feet high, dividing into a great Number of small Branches, closely garnished with small, oval, sawed Leaves fitting close to the Branches; between these are many very small Leaves placed without Order. The Flowers are produced on the Side of the Branches on very short Foot Stalks; these are small, and the Petals soon fall off, so that it has been supposed to have no Petals. The Flowers are succeeded by compressed Seed Vessels, 3 Inches long, rounded at their Points, and open with 2 Valves at the Top, containing a great Number of small angular Seeds. This Plant hath a perennial Stalk, so may be preserved through the Winter in a moderate Stove, and the 2d Year will flower in June, and produce ripe Seeds in Autumn; but when the Plants are brought forward, so as to flower the first Year, they seldom perfect their Seed, and these Plants cannot be so well preserved as those which are treated hardily in the Summer.

All these Sorts are too tender to thrive in England in the open Air, therefore their Seeds must be sown on a hot Bed in Spring, and when the Plants are come up fit to remove, they should be transplanted on a fresh hot Bed, to bring them forward, otherwise they will not ripen Seeds. After the Plants are rooted in the new hot Bed, they must have free Air every Day, in Proportion to the Warmth of the Season, for they must not be drawn up weak; when the Plants have obtained Strength, they should be transplanted each into a Pot, and plunged into a hot Bed, observing to shade them from the Sun till they have taken Root; then they must have a large Share of Air every Day, and should be frequently refreshed with Water, and in June they should be gradually inured to the open Air, and Part of them may be shaken out of the Pots, and planted in a warm Border, where, if the Season proves warm, they will flower and perfect Seeds; but as these will sometimes fail, it will be proper to put one or two Plants of each Sort into Pots, which should be placed in a Glass Case, where they may be screened from bad Weather, and from these good

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Seeds may always be obtained. The last Sort may also be treated in the same Manner during the Summer, but in Autumn they must be removed into the Stove, and plunged in the Bark Bed, and these will flower early the 2d Year, and ripen Seeds.

CORDIA. Plum. Nov. Gen. 13. Tab. 14. *Sebestena*. Dillen. Hort. Elth. 225. Sebesten.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, indented in 3 Parts. It hath a Funnel-shaped Petal, whose Tube is the Length of the Empalement, and the Top is divided into 4, 5, or 6 Parts, which are obtuse and erect. It hath 5 Stamina, terminated by long Summits, and in the Center a roundish pointed Germen, supporting a bifid Style, crowned by two obtuse Stigmas. The Germen becomes a dry Berry, which is globular and pointed, fastened to the Empalement, and incloses a furrowed Nut with 2 Cells.

The Species are,

1. *CORDIA foliis oblongo-ovatis, repandis, scabris.* Lin. Sp. Plant. 190. *Cordia* with oblong, oval, rough Leaves, turning backward. This is the *Caryophyllus spurius inodorus, folio subrotundo, scabro, flore racemoso, hexapetalide, coccineo.* Sloan. Cat. 136. Wild unsavory Cloves with a roundish rough Leaf, and a scarlet Flower, commonly called *Lignum Aloes*.

2. *CORDIA foliis subovatis serrato dentatis.* Hort. Cliff. 63. *Cordia* with oval sawed Leaves. This is the *Sebestena domestica* sive *Myxa*. Com. H. A. cultivated Sebesten.

3. *CORDIA foliis ovatis, integerrimis.* Lin. Sp. Plant. 191. *Cordia* with oval entire Leaves. This is the *Cordia Nucis juglandis folio flore purpureo.* P. N. 13. *Cordia* with a Walnut Tree Leaf and a purple Flower.

The 1st Sort grows naturally in several Islands in the West-Indies; this rises with several shrubby Stalks 8 or 9 Feet, garnished toward the Top with oblong, oval, rough Leaves, standing alternate, on short Foot Stalks; they are of a deep green on their upper Side. The Flowers terminate the Branches, growing in large Clusters on branching Foot Stalks, some sustaining one, others 2, and some have 3 Flowers, which are large, Funnel-shaped, having long Tubes, which spread open at the Top, where it is divided in 5 obtuse Segments. They are of a beautiful Scarlet, so make a fine Appearance.

The 2d Sort is by most Botanists believed to be the *Myxa* of *Casolinus*; which is the true Sebesten of the Shops; the Fruit of which was formerly used in Medicine, but of late Years has been seldom brought to England; therefore is rarely ordered. This is called *Affyrrian Plumb*, from the Country where it naturally grows; this rises to the Height of our common Plumb-Trees, in its native Country. It is very rare in Europe at present: I saw one Plant of this in the Garden at Amsterdam, which is the only one I have yet seen.

The 3d Sort was discovered by Father Plumier, in some of the French Islands in America; and since was found in the Bay of Campeachy, by Mr. Robert Millar, who sent the Seeds to England. This Sort grows to the Height of 18 or 20 Feet in the natural Places where it is found wild; it hath winged Leaves, which are large, entire, and smooth, but it hath not yet flowered in England, so I can give no farther Account of it.

These Plants, being Natives of warm Countries, are too tender to live through the Winter in this Country, unless

unless preserved in a Stove. They are all propagated by Seeds, which must be procured from Countries of their natural Growth; for they never produce any in England. These Seeds must be sown in small Pots, and plunged into a good hot Bed of Tanners Bark in Spring; and if the Seeds are fresh and good, the Plants will begin to appear in 5 or 6 Weeks after. These must be brought forward in the hot Bed, by being treated as other tender exotick Plants; observing frequently to water them, as they are aquatick Plants; and in July, if the Plants have made much Advance, they should be gradually hardened; otherwise they will grow so weak as not to be easily preserved through the Winter. As these Plants obtain Sirength, they will become more hardy; but during the two first Winters, it will be proper to plunge them into the Tan Bed in the Stove; but when they begin to have woody Stems, they may be placed on Shelves, in a dry Stove; where if they are kept in a moderate Degree of Heat, they may be preserved very well (especially the 1st Sort;) which is somewhat hardier than the others. This may also be placed abroad in a warm Situation, in the Beginning of July; where they may remain till the Middle of September, provided the Season continues warm; otherwise it must be removed into the Stove sooner.

These Plants, especially the 1st Sort, produce large Tufts of very fine scarlet Flowers, at the Extremity of the Branches, after the same Manner as the Oleander or Rose-bay; but these Flowers are much larger, and of a much finer Colour.

A small Piece of the Wood of this Tree, being put on a Pan of lighted Coals, will send forth a most agreeable Odour, which will perfume a whole House.

COREOPSIS. Lin. Gen. Pl. 879. Tickseed.

The Characters are,

The common Empalement of the Flower is double, the outer being composed of 8 Leaves placed circularly; the inner is in every Part larger, membranaceous, and coloured. The Disk of the Flower is composed of many hermaphrodite Florets which are tubular, and divided into 5 Parts at the Top, these have each 5 hairy Stamina, terminated by cylindrical Summits; in their Center is situated a compressed Germen with 2 Horns, supporting a slender Style, crowned by an acute bifid Stigma. The Germen becomes a single orbicular Seed, convex on one Side; and hollow on the other; having a membranaceous Border, and 2 Horns on the Top. The Border or Rays of the Flower is composed of 8 female Florets, large, and Tongue-shaped, indented in 5 Parts; these have no Stamina, but a Germen like the other without any Style or Stigma, and are abortive.

The Species are,

1. COREOPSIS foliis lanceolatis, serratis, alternis, petiolatis decurrentibus. Hort. Upsal. 270. Tickseed with Spear-shaped, sawed Leaves, placed alternate, and are decurrent and have Foot Stalks. This is the *Chrysanthemum Virginianum*, caule alato, ramosis, flore minore. Pluk. Alm. 100. Virginia Corn Marigold with a branching, winged Stalk, and a smaller Flower.

2. COREOPSIS foliis linearibus integerrimis. Gron. Virg. 181. Tickseed with very narrow entire Leaves.

3. COREOPSIS foliis lanceolatis, integerrimis. Lin. Sp. Pl. 908. Tickseed with Spear-shaped Leaves, which are entire. This is the *Bidens Succisa folio*, radio amplo laci-

niato. Hort. Elth. 55. *Bidens* with a Devils-bit Leaf and large Rays, which are cut on the Edges.

4. COREOPSIS foliis decomposito pinnatis, linearibus. Lin. Sp. Pl. Tickseed with decomposed, winged, narrow Leaves. This is the *Ceratocephalus delpinii foliis*. Vaill. *Ceratocephalus* with Larkspur Leaves.

5. COREOPSIS foliis subternatis, integerrimis. Hort. Ups. Tickseed with entire Leaves growing by Threes. This is the *Chrysanthemum Virginianum*, folio acutiore, levi, trifoliato, f. *anagyridis folio*. Mor. Virginia Corn Marigold with a pointed, smooth, trifoliate Leaf.

6. COREOPSIS foliis lineari lanceolatis, acutè serratis, oppositis radio amplo integro. Tickseed with narrow, Spear-shaped Leaves, which are opposite and sharply sawed, and the Ray of the Flower large and entire.

The 1st Sort grows naturally in North America every where; this hath a perennial Root, and an annual Stalk, which decays to the Root every Winter; the Stalks are strong, herbaceous, and rise to the Height of 8 or 10 Feet, garnished with Spear-shaped Leaves sawed on their Edges, from 3 to 4 Inches long, and one broad in the Middle, placed alternate on every Side the Stalks, having short Foot Stalks, with a Border or Wing running from one to the other, the whole Length of the Stalk. The Flowers grow at the Top of the Stalks, forming a sort of Corymbus, each Foot Stalk sustaining 1, 2, or 3 yellow Flowers, shaped like Sun Flowers but much smaller. This flowers in August and September, but doth not produce Seeds in England. It is a very hardy Plant, and may be propagated in Plenty, by parting the Roots, the best Time for this is in Autumn when the Stalks begin to decay. It will thrive in almost every Soil and Situation.

The 2d Sort is a Plant of humbler Growth, seldom rising above 2 Feet high: the Stalks grow erect, and the Leaves are very long, narrow, entire and rough: The Flowers are produced at the Extremity of the Shoots, of a fine yellow Colour, having a dark purple Middle; and these are of long Duration. The Plants commonly begin to flower the Middle of July, and continue till October; and if the Season proves favourable, some Flowers will continue till November; which makes it merit a Place in every good Garden. The Seeds of this Sort have been frequently sent to England from Maryland, where the Plants grow wild; but these seem to be biennial Plants with us, their Roots having as yet continued but two Years; nor do they perfect their Seeds in England; so that at present the Plants are very rare in the English Gardens; but as it is hardy, we may hope to reconcile it to our Climate, and find a Method to increase it.

The 3d Sort is an annual Plant; the Seeds of this were brought from Carolina by Mr. Catesby, in 1726. This hath an upright Stalk, garnished with smooth narrow Spear-shaped Leaves, placed opposite which are entire; from the Wings of the Leaves come out the Foot Stalks of the Flowers, by Pairs opposite, and stand erect; the lower Part of these have one or two Pair of very narrow Leaves, but the upper is naked, and terminated by one large yellow Flower, whose Border or Rays are deeply cut into several Segments; these are succeeded by flat winged Seeds, which when ripe roll up, the naked Foot Stalks of these Flowers are more than

than a Foot long. This must be sown upon a gentle hot Bed in Spring; and when the Plants are fit to transplant, they should be each planted in a small Pot, and plunged into a fresh hot Bed to bring them forward; in June they should be inured by degrees to the open Air, and afterward some of them may be shaken out of the Pots, and planted in a warm Border; where, if the Season is good, they will flower the Middle of July, and ripen their Seeds the Beginning of September.

The 4th Sort hath a perennial Root, which sends up many stiff angular Stalks, which rise upward of 3 Feet high, garnished at each Joint with decompound winged Leaves standing opposite; these are very narrow and entire. The Branches come out by Pairs opposite as also the Foot Stalks of the Flowers, these are long, slender, and each terminated by a single Flower of a bright yellow; the Rays or Border being oval and entire. The Disk or Middle is of a dark purple Colour. These appear in July, and continue till September, during which Time they make a fine Appearance. This grows naturally in Maryland and Philadelphia. It is propagated by parting the Roots as the first Sort, and delights in a light loamy Earth, and a sunny Exposure.

The 5th Sort hath a perennial Root and an annual Stalk. This grows naturally in many Parts of North America, but has been long cultivated in the English Gardens; the Stalks are strong, round, and smooth, rising 6 or 7 Feet high, and are garnished at each Joint with some trifoliate Leaves, which stand opposite. The Flowers are produced in Bunches at the Top of the Stalks, standing upon long Foot Stalks; they are of a pale yellow, with a dark purple Disk. It flowers in July, but seldom produces good Seeds in England. This Sort is propagated by parting the Roots as the first, but requires a better Soil and Position.

The 6th Sort grows naturally in South Carolina, from whence the Seeds were sent me by the late Dr. Dale. This is an annual Plant; which rises with upright Stalks to the Height of 4 Feet, garnished with narrow Spear-shaped Leaves ending in long Points, and deeply sawed on their Edges, standing by Pairs opposite at each Joint upon short Foot Stalks; these Leaves are from 3 to 4 Inches long, and 3 Quarters of an Inch broad in the Middle, of a deep green on the upper Side, and pale on their under. At all the upper Joints of the Stalks, come out two long slender Foot Stalks, one on each Side, garnished with 2 or 3 Pair of small Leaves, and terminated by one Flower, composed of 7 female half Florets which compose the Ray; these are oval and entire. The Disk is composed of a great Number of hermaphrodite Florets, of a dark Colour, and the Summits of the Stamina of a bright yellow. These hermaphrodite Florets are each succeeded by one flat bordered Seed, having two Horns or Teeth. This Sort flowers in August, and if the Autumn proves favourable, will ripen Seeds in October; but in cold Seasons it will not perfect Seeds in England.

This Sort is propagated by Seeds, which should be sown on a warm Border in Autumn, and the Plants will come up the following Spring; for if the Seeds are sown in the Spring, the Plants seldom rise till the Year after. When fit to remove, they should be carefully taken up and either planted where they are designed to remain, or into a Nursery Bed, at 4 Inches dis-

tance to get Strength, observing to shade them from the Sun till they have taken fresh Root; after which, those which are planted out for good, will require no other Treatment, but to keep them clean from Weeds, and as they advance in Height, should be supported by Sticks, otherwise the strong Winds in Autumn often break them; those which were placed in a Nursery Bed, when they have obtained proper Strength, should be taken up and transplanted with Balls of Earth to their Roots, where they are designed to stand for flowering.

As these Plants produce Flowers till the Frost puts a Stop to them, they merit a Place in every curious Garden, especially those which do not ramble and spread too much. The 1st is the least deserving, so is seldom preserved, but in Botanick Gardens.

CORIANDRUM. *Lin. Gen. Plant.* 318. *Tourn. Inst. R. H.* 316. *Tab.* 168. Coriander.

The Characters are,

It is a Plant with an umbellated Flower, the universal Umbel hath but few Rays, the particular Umbels have many. The first hath no Involucrum, but the latter hath a 3 leaved one; the proper Empalement is divided into 5 Parts, the Rays of the principal Umbel are difform; the hermaphrodite Flowers, which form the Disk, have 5 equal Heart-shaped Petals which are inflexed, but those of the Rays have five unequal Petals of the same Form; they have each 5 Stamina, terminated by roundish Summits. The Germen which is situated under the Flower, supports two Styles crowned by small radiated Stigmas; the Germen afterward becomes a spherical Fruit, divided into two Parts, each having a hemispherical concave Seed.

The Species are,

1. CORIANDRUM fructibus globosis. *Hort. Cliff.* 100. Coriander with globular Fruit. This is the *Coriandrum majus*. *C. B. P.* 158. Greater Coriander.

2. CORIANDRUM fructibus didymis. *Hort. Cliff.* 100. Coriander with twin Fruit. *Coriandrum minus testiculatum*. *C. B. P.* 158. Smaller testiculated Coriander.

The 1st of these Species is the most common Kind, which is cultivated in the European Gardens and Fields for the Seeds, which are used in Medicine. The 2d Sort is less common, and is seldom found but in Botanick Gardens. These Plants grow naturally in the South of France, in Spain and Italy, but the first Sort has been long cultivated in the Gardens and Fields; though at present there is not near so much of it sown in England as was some Years past.

These Plants are propagated by sowing their Seeds early in Spring, in an open Situation, in a Bed of good fresh Earth; and when the Plants come up, they should be hoed out to about 4 Inches Distance every Way, clearing them from Weeds; by which Management these Plants will grow strong, and produce a greater Quantity of good Seeds. The 1st Sort was formerly cultivated in the Gardens as a Sallad Herb. If the Seeds of this are sown in Autumn, the Plants will rise much stronger, and produce a greater Quantity of Seeds, than those sown in Spring.

CORIARIA. *Lin. Gen. Plant.* 458. *Nissol. A7. Reg.* 1711. Myrtle leaved Sumach, vulgo.

The Characters are,

It is male and female in different Plants; the male Flowers have a 5 leaved Empalement; the Flower has 5 Leaves, which

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which are joined to the Empalement; these have 10 slender Stamina, terminated by oblong Summits; the female Flowers have the like Empalement, and the same Number of Petals; and in the Center are 5 Pointals, which turn to a Berry, inclosing 5 Kidney-shaped Seeds.

The Species are,

1. *CORIARIA foliis ovato oblongis*. Hort. Upsal. 299. Myrtle leaved Sumach, with oblong, oval Leaves. This is the *Coriaria vulgaris mas*. Nissol. Act. 1711. Male Myrtle leaved Sumach.

2. *CORIARIA vulgaris fœmina*. Lin. Hort. Cliff. Female Myrtle leaved Sumach.

The Sort with male Flowers is the most common in England, the other being very rarely seen in any of the Gardens. These grow wild in great Plenty about Montpellier in France, where it is used for Tanning Leather; and, from this Use, has been titled by the Botanists, *Rhus coriariorum*; i. e. Tanners Sumach.

These Shrubs seldom grow more than 3 or 4 Feet high; and as they creep at the Root, send forth many Stems, whereby they form a Thicket; so may be planted to fill up Vacancies in Wilderness Quarters; but they are improper for small Gardens, where they will take up too much Room; and as there is no great Beauty in the Flowers, they are only admitted for Variety.

It is strange that Mr. Nissol, who lived on the Place where these grew in Plenty, who constituted this Genus, in the Memoirs of the Academy at Paris, has taken no Notice of their being male and female in different Plants.

It may be propagated plentifully from the Suckers, which are produced from the creeping Roots in great Abundance; these should be taken off in March, and planted into a Nursery, to form good Roots; where they may continue one or two Years, and then must be removed to the Places where they are to remain.

This Plant delights in a loamy Soil, which is not too stiff; and should be placed where it may have Shelter from the North and East Winds; where it will endure the Cold of our ordinary Winters very well, and will flower better than if it is preserved in Pots, and sheltered in the Winter, as hath been by some practised.

CORINDUM. See Cardiospermum.

CORIS. Lin. Gen. Plant. 216. Tourn. Inst. 652. Tab. 423. We have no English Name for this Plant.

The Characters are,

The Empalement of the Flower is of one Leaf with a swelling Belly, but closed at the Top, where it is divided into 5 Parts, which are crowned by 5 Spines; the Flower hath one ringent Petal, whose Tube is the Length of the Empalement, and spread open at the Top where it is divided into 5 oblong Segments, which are obtuse and indented; it hath 5 bristly Stamina, terminated by single Summits. In the Center is situated a round Germen, supporting a slender declining Style, crowned by a thick Stigma; the Empalement afterward becomes a globular Capsule having 5 Valves, inclosing several small oval Seeds.

We have but one Species of this Plant, viz.

CORIS. Hort. Cliff. 68. This is the *Coris cerulea maritima*. C. B. P. 280. Blue maritime Coris.

There are two other Varieties of this Plant, one with a red, and the other a white Flower, but these are only accidental Varieties arising from the same Seeds.

These Plants grow wild about Montpellier, and in most Places in the South of France; they seldom grow above

six Inches high, and spread near the Surface of the Ground like Heath; and in June, when they are full of Flowers, make a very pretty Appearance.

They may be propagated by sowing their Seeds in Spring, on a Bed of fresh Earth; and when the Plants are about an Inch high, they should be transplanted, some of them into Pots filled with fresh light Earth, that they may be sheltered in Winter; and others into a warm Border, where they will endure the cold of our ordinary Winters very well; but in severe Frost they are generally destroyed; for which Reason, it will be proper to put some Pots of each Sort under a common hot Bed Frame in Winter, where they may be covered in frosty Weather; But when it is mild, they should have a great Share of free Air. These Plants do not constantly produce ripe Seeds in England; therefore it will be proper to increase them from Slips and Cuttings; which will take Root, if planted in August on a very gentle hot Bed, and shaded from the Sun, and duly watered.

CORISPERMUM. Lin. G. P. Jus. Tickseed.

The Characters are,

The Flower hath no Empalement, it hath 2 compressed incurved Petals which stand opposite and are equal; it hath one, 2, or 3 Stamina, shorter than the Petals, terminated by single Summits. It hath a compressed pointed Germen, supporting 2 hairy Styles crowned by acute Summits. The Germen becomes an oval Seed with an acute Border.

The Species are,

1. *CORISPERMUM floribus lateralibus*. Hort. Upsal.

2. Tickseed with Flowers on the Side of the Stalks. This is the *Corispermum Hyssopifolium*. Jus. Act. R. 1712. Hyssop leaved Tickseed.

3. *CORISPERMUM spicis squarrosis*. Hort. Upsal. 3. Tickseed with rough Spikes. This is the *Rhagrostis foliis arundinaceis*. Buxb. *Rhagrostis* with Reed-like Leaves.

These Plants are preserved only in Botanick Gardens for the sake of Variety; having no Beauty.

The first Sort is an annual Plant, which, if suffered to scatter its Seeds, the Ground will be plentifully stocked with the Plants; which will require no other Care, but to prevent the Weeds from over growing them.

The 2d will not grow but in marshy Places, where there is standing Water; over the Surface of which this Plant will soon extend, when once it is established.

As we had no English Name to this Genus, I have given it this of Tickseed; which corresponds with the Latin Name.

CORK-TREE. See Quercus.

CORN-FLAG. See Gladiolus.

CORNICULATE-PLANTS [*Plantæ Corniculatæ*, are such, as after each Flower produce many horned Seed Pods, called *Siliquæ*.]

CORN-MARIGOLD. See Chrysanthemum.

CORN-SALLAD. See Valerianella.

CORNUS Lin. Gen. Plant. 139. Tourn. Inst. 641. Tab. 410. The Cornelian Cherry.

The Characters are,

It hath many Flowers which are included in one common four leaved Involucrum, which is coloured. The Flowers have each a small Empalement, sitting on the Germen which is indented in 4 Parts. They have 4 plain Petals, which are smaller than the Leaves of the Involucrum, and 4 ere 3

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Stamina longer than the Petals, terminated by roundish Summits; the round Germen situated below the Empalement, supports a slender Style crowned by an obtuse Stigma. The Germen becomes an oval, or roundish Berry inclosing a Nut with two Cells, having an oblong Kernel.

The Species are,

1. *CORNUS arborea, cymis nudis. Lin. Sp. Plant. 117.* Dogwood Tree with naked Shoots. This is the *Cornus feminea. C. B. P. 447.* Female Dogwood, and the *Virga Sanguinea. Mattb.* Bloody Twig.

2. *CORNUS arborea, umbellis involucrium æquantibus. Hort. Cliff. 38.* Tree Dogwood with Umbels equal in the Involucrium. This is the *Cornus bortenensis mas. C. B. P. 447.* Male Cornel or Cornelian Cherry Tree.

3. *CORNUS mas Virginiana, flosculis in Corymbo digestis, à perianthio tetrapetalo albo radiatim cinctis Pluk. Alm. 120.* Male *Virginia* Dogwood, with Flowers collected into a Corymbus, surrounded by a four leaved white Involucrium disposed in the Form of Rays.

4. *CORNUS feminea Virginiana angustiore folio. Female Virginia* Dogwood with a narrower Leaf.

5. *CORNUS Americana sylvestris, domesticæ similis, baccæ ceruleæ coloris elegantissimæ, Amomum Novæ Angliæ quorundam. Pluk. Phyt. Tab. 169.* Wild American Dogwood, like the cultivated, with very beautiful blue Berries, by some the true *Amomum* of New England.

6. *CORNUS feminea candidissimis foliis Americana Pluk. Alm. 120.* Female Dogwood of *America* with very white Leaves, commonly called Swamp Dogwood.

7. *CORNUS sylvestris fructu albo. Amman. Ruth.* Wild Dogwood with a white Fruit.

8. *CORNUS pumila herbacea, chamæpericlymenum dicta. Hort. Eltb. 108.* Low herbaceous Dogwood, called, Dwarf Honeyfuckle.

The first of these Trees is very common in the Hedges in divers Parts of *England*, and is seldom preserved in Gardens. The Fruit of this Plant is often brought into the Markets, and sold for Buckthorn Berries; from which it may be easily distinguished, if the Berries are opened to observe how many Stones there are in each; which in this Fruit is but one, but in the Buckthorn four; and they may be easily distinguished by rubbing the Juice of the Berries on Paper; that of the Buckthorn will stain the Paper green, whereas the Juice of this stains it purple. This Tree is called *Virga Sanguinea*, from the young Shoots being of a fine red Colour. There is a Variety of this Tree with variegated Leaves, preserved in the Nurseries, but is not much esteemed.

The 2d Sort is very common in the *English* Gardens, being propagated for its Fruit; which is by many People preserved to make Tarts. It is also used in Medicine as an Astringent and Cooler. There is also an official Preparation of this Fruit, called, *Rob de Cornis*. Of this there are two or three Varieties, which differ in the Colour of their Fruit; but that with the red Fruit is the most common in *England*.

As the Fruit of this Tree is not at present much esteemed, the Nursery Men about *London* propagate it as one of the Sorts commonly sold as a flowering Shrub; and is by some People valued, for coming so early to flower; for if the Season is mild, the Flowers will appear by the Beginning of *February*; and though there is no great Beauty in the Flowers, yet, as they are

generally produced in Plenty, at a Season when few other Flowers appear, a few Plants of them may be admitted for Variety. The Fruit is seldom ripe before *September*. The Tree will grow 18 or 20 Feet high, and make a large Head.

The 3d Sort is found in all the Northern Parts of *America*, as are also the 4th, 5th and 6th Sorts, being Natives of the Woods in *Virginia*, *New-England*, *Maryland*, and *Carolina*. These are all of them very hardy, and thrive well in the open Air in *England*; so are cultivated by the Nursery Men near *London*, to add to the Variety of their hardy Trees: These grow to the same Height with our common female Dogberry, and make a much better Appearance. The Shoots of the 5th Sort are of a beautiful red Colour in Winter; and in Summer the Leaves being large, and whitish on their under Side, and the Bunches of white Flowers growing at the Extremity of every Branch, renders this Shrub valuable; in Autumn, when the large Bunches of blue Berries are ripe, they make a fine Appearance.

The 3d Sort is now very common in the Nurseries, where it is known by the Name of *Virginia* Dogwood: This Sort is of a much humbler Growth than either of the former, seldom rising above 7 or 8 Feet high. This is generally well garnished with Leaves, which are larger than either of the other Sorts; but is not so plentiful of Flowers, nor have I yet seen any of these Shrubs, which have produced Berries in *England*, though the Shrubs are as hardy as the other.

There is a Variety of this with a red Involucrium, or Cover, to the Flowers, which adds to the Beauty of the Plant; this was found wild in *Virginia* by Mr. *Banister*, and by Mr. *Catesby*. This and the former Sort are great Ornaments to the Woods in *America*; first by their early flowering in Spring, before the green Leaves appear; and in Winter when the Berries are ripe, which hang upon the Shrubs till the Spring.

The 8th Sort grows upon *Cheviot Hills* in *Northumberland*, and also upon the *Alps*, and mountainous Places in the Northern Countries; but this is very difficult to preserve in Gardens; the only Method is, to remove the Plants from the Places of their natural Growth, with good Balls of Earth to their Roots, and plant them in a moist shady Situation, where they are not annoyed by the Roots of other Plants. In such a Situation they may be preserved two or three Years; but it rarely happens that they will continue longer.

All the Sorts of Dogwood may be propagated by their Seeds, which, if sown in Autumn soon after they are ripe, will most of them come up the following Spring; but if they are not sown in Autumn, they will lie a Year in the Ground before the Plants will appear; and when the Year proves dry, they will sometimes remain two Years in the Ground; therefore the Place should not be disturbed, where these Seeds are sown, under two Years, if the Plants should not come up sooner. When the Plants come up, they should be duly watered in dry Weather, and kept clean from Weeds; and the Autumn following, they may be removed, and planted in Beds in the Nursery, where they may remain two Years; by which Time they will be fit to transplant, where they are to remain for good.

They are also propagated by Suckers, and laying down the

the Branches; most of the Sorts produce Plenty of Suckers, especially when they are planted on a moist light Soil, which may be taken off from the old Plants in Autumn, and planted into a Nursery for a Year or two, and then may be transplanted into the Places where they are to remain; but those Plants which are propagated by Suckers, rarely have so good Roots as those which are propagated by Layers, and being much more inclinable to shoot out Suckers, whereby they will fill the Ground round them with their Spawn; they are not near so valuable as the Plants raised from Layers.

CORNUTIA. Plum. N. G. 17. Lin. Gen. Pl. 684. *Agnanthus* Vaill. Afl. R. 1722. [So called from *Cornutus*, a Physician of Paris, who published a History of Canada Plants.]

The Characters are,

The Flower hath a small permanent Empalement of one Leaf, tubular and indented in 5 Parts at the Top. The Flower is of one Petal, having a cylindrical Tube, much longer than the Empalement, and divided into 4 Parts at the Top, the upper Segment is round, and erect, the 2 side ones spread apart, and the lower, is round and entire; it hath 4 Stamina, 2 of these are longer than the Tube, the other are shorter, they are terminated by inclining Summits. In the Center is situated the roundish Germen, supporting a long Style divided into 2 Parts, crowned by two thick Stigmas. The Germen becomes a globular Berry sitting upon the Empalement, inclosing several Kidney-shaped Seeds.

We have but one Species of this Plant, viz.

CORNUTIA. Hort. Cliff. 319. This is called by Plumier, *Cornutia flore pyramidato cæruleo, foliis incanis*. Nov. Gen. 32. *Cornutia* with a blue pyramidal Flower and hoary Leaves.

This Plant was first discovered by Father Plumier in America, who gave it the Name. It is found in Plenty in several of the Islands in the West-Indies and at Campeachy and La Vera Cruz; from both which Places I received the Seeds. It grows to the Height of 10 or 12 Feet: The Branches grow straggling, and the Leaves are placed by Pairs opposite. The Flowers are produced in Spikes at the End of the Branches, of a fine blue Colour; these usually appear in Autumn, and sometimes will remain in Beauty for two Months or more.

It is propagated by Seeds which should be sown early in Spring on a hot Bed; when the Plants come up, they should be transplanted each into a Halfpenny Pot, filled with light fresh Earth, and plunged into a hot Bed of Tanners Bark, observing to shade them until they have taken Root; after which they should have fresh Air let into the Bed, in Proportion to the Warmth of the Season, and must be frequently watered (for it naturally grows on swampy Soils). When the Plants have filled these Pots with their Roots, they should be shifted into others of a larger Size, and plunged into a hot Bed again, where they should be continued till October; when they must be removed into the Bark Stove, and plunged into the Tan; otherwise it will be very difficult to preserve it through the Winter. The Stove in which these Plants are placed, should be kept to the temperate Heat marked on Mr. Fowler's Thermometers, which will agree better with them than a hotter Stove. The third Year from Seed these Plants will flower, when they

make a fine Appearance in the Stove; but they never perfect Seeds in England.

They may be also propagated by Cuttings, planted in Pots filled with fresh Earth, and plunged into a Bark Bed, observing to shade and water them; they must be afterwards treated as the seedling Plants.

CORONA IMPERIALIS. See *Fritillaria*.

CORONA SOLIS. See *Helianthus*.

CORONILLA. Jointed-podded *Colutea*.

The Characters are,

The Flower hath a short permanent Empalement of one Leaf, which is compressed, bifid, and erect. It hath a Butterfly Flower, whose Standard is Heart-shaped, and reflexed on each Side. The Wings are oval, and join at the Top. The Keel is shorter than the Wings, and is pointed and compressed. It hath nine Stamina, which are united, and one standing single, which are broad at the Top, terminated by small Summits. In the Center is situated an oblong taper Germen, supporting a bristly rising Style, crowned by an obtuse Stigma. The Germen afterward becomes a taper jointed Pod, inclosing oblong Seeds.

The Species are,

1. **CORONILLA fruticosa, foliolis emarginatis, extimo minore.** Shrubby *Coronilla*, whose lesser Leaves are indented, and those on the upper Part smaller. This is the *Coronilla maritima glauco folio*. Tourn. Inst. 650. Maritime *Coronilla* with a Sea-green Leaf.

2. **CORONILLA fruticosa foliolis undenis, extimo majore.** Lin. Sp. Pl. 743. Shrubby *Coronilla* with 11 small Leaves, the outer being the largest. This is the *Coronilla argentea Cretica* Tourn. Silvery *Coronilla* of Crete.

3. **CORONILLA fruticosa stipulis subrotundis.** Lin. Sp. Plant. 742. Shrubby *Coronilla* with roundish Stipulæ. This is the *Coronilla five Colutea minima*. Lob. Icon. 87. Smaller *Coronilla*, or *Colutea*.

4. **CORONILLA fruticosa enneaphylla, foliolis emarginatis, stipulis majoribus subrotundis.** Shrubby nine leaved *Coronilla*, whose small Leaves are indented, and having larger roundish Stipulæ. This is the *Coronilla filiquis & seminibus crassioribus*. Tourn. Inst. R. 650. *Coronilla* with thicker Pods and Seeds.

5. **CORONILLA foliolis plurimis, ovatis, caule suffruticoso declinato, pedunculis longioribus.** *Coronilla* with many, oval Lobes, a declining Stalk, somewhat shrubby, and longer Foot Stalks to the Flowers. This is the *Coronilla minima*. Tourn. Smallest *Coronilla*.

6. **CORONILLA herbacea, leguminibus erectis, teretibus, torosis, numerosis, foliis glabris.** Hort. Cliff. 363. Herbaceous *Coronilla* with many, taper, erect Pods, and smooth Leaves. This the *Coronilla herbacea flore vario*. Tourn. Herbaceous *Coronilla* with a various coloured Flower.

7. **CORONILLA herbacea, leguminibus quinis, erectis, teretibus, articulatis.** Prod. Leyd. Herbaceous *Coronilla* with 5, taper, erect, jointed Pods. This is the *Coronilla Cretica herbacea, flore parvo purpurascens*. Tourn. Herbaceous *Coronilla* of Crete, with a small purplish Flower.

8. **CORONILLA orientalis herbacea, flore magna luteo.** Tourn. Cor. 44. Eastern *Coronilla* with an herbaceous Stalk, and a large yellow Flower.

9. **CORONILLA scandens pentaphylla.** Plum. Cat. 19. Climbing five leaved *Coronilla*.

The 1st Sort is an humble Shrub, which seldom rises higher

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higher than 2 Feet high, with a shrubby branching Stalk, garnished closely with winged Leaves, each being generally composed of 5 Pair of small Leaves (or Lobes) terminated by an odd one; these are narrow at their Base, and broad at the Top, where they are roundish and indented; they are of a Sea-green Colour, and continue all the Year. The Flowers are produced on slender Foot Stalks from the Wings of the Leaves, on the upper Part of the Branches, several standing together in a roundish Bunch; they are of the Butterfly, or Pea-bloom Kind, and of a bright yellow Colour, having a very strong Odour, which to some Persons is agreeable, but to others the contrary. This flowers in *April* and *May*, and the Seeds ripen in *August*.

This Plant is propagated by Seeds sown in Spring, either upon a gentle hot Bed, or on a warm Border of light fresh Earth; and when the Plants are come up about 2 Inches high, they should be transplanted either into Pots, or into a Bed of good rich Earth, at about 4 or 5 Inches Distance every Way, where they may remain until they have obtained Strength enough to plant out for good, which should be either into Pots filled with good fresh Earth, or in a warm situated Border; in which if the Winter is not too severe, they will abide very well, provided they are in a dry Soil.

The 2d Sort is a Shrub of the same Size with the first, from which it differs in the Number of small Leaves (or Lobes) on each Mid-rib; these having 9 or 11, and are of a Silver Colour, but the Flowers and Pods are the same. It flowers at the same Time, and requires the same Treatment as the former.

The 3d Sort is a very low shrubby Plant, seldom rising a Foot high, but the Stalks are shrubby; these are garnished with many winged Leaves, composed of many small oval Lobes placed along the Mid-rib by Pairs, and ending in an odd one. The Flowers stand upon long slender Foot Stalks, which arise from the End of the Branches, they are yellow, and grow together in close Bunches. This flowers in *June*, and the Seeds are ripe in *August*. This is a perennial Plant, which is propagated by Seeds; they may be sown on a Bed of light Earth in *April*, and when fit to transplant, they should be planted in a warm Border, observing to shade them from the Sun till they have taken fresh Root, and refresh them with Water, when they require it. After they are well rooted, they will require no other Culture, but to keep them clean from Weeds; the next Year they will flower, and if they are on a dry Soil, and in a warm Situation, they will continue many Years.

The 4th Sort is nearly like the 1st, but hath fewer Pinnæ on each Mid-rib. The Flowers are larger, and have little Scent. The Pods and Seeds are much larger, and the Plants not quite so hardy. This flowers in *May* and *June*, but rarely perfects Seeds in *England*; it requires the same Treatment as the 1st, but in Winter should be sheltered, or hard Frosts will destroy them.

The 5th Sort is a low trailing Plant, with shrubby Stalks, which spread near the Ground, and are garnished with winged Leaves, composed of many Pair of small Leaves placed along the Mid-rib, terminated by an odd one; these are oval, and of a bright green, the Flowers stand upon long Foot Stalks in close Bunches, they are yellow, and without Scent. It flowers in *May*, and the

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Seeds ripen in Autumn. This is propagated by Seeds as the 3d, and requires the same Treatment.

The 6th Sort dies down every Winter, but rises again the succeeding Spring; these rise to the Height of 5 or 6 Feet, where they have Support, otherwise they trail on the Ground; they are garnished with winged Leaves, composed of several oblong small Pinnæ, sometimes placed by Pairs, and at other Times alternate, ending in a single one; they are of a deep green. The Flowers come out on long Foot Stalks from the Wings of the Leaves, many growing together in round Bunches; they are variable from a deep to a light purple, mixed with white, and are succeeded by slender Pods from 2 to 3 Inches long, standing erect. This Plant flowers in *June*, *July*, and *August*, and the Seeds ripen in Autumn. The Roots of this Plant creep very far under Ground, by which the Plant increases greatly; which, when permitted to remain unremoved for 2 or 3 Years, will spread and overbear whatever Plants grow near it, for which Reason the Roots should be confined, and it should be planted at a Distance from any other Plants; it thrives best in a warm sunny Exposure, in which the Flowers will also be much fairer, and in greater Quantities. This Plant was formerly cultivated to feed Cattle.

The 7th Sort hath an herbaceous Stalk, which rises two Feet, garnished with winged Leaves, composed of 6 Pair of small Leaves, placed along the Mid-rib, which is terminated by an odd one; these are larger than those of the 6th Sort, and broader at the Top. The Foot Stalks of the Flowers come out from the Side of the Stalks; they are shorter than those of the 6th, and sustain smaller Heads of Flowers, which are succeeded by 5 taper jointed Pods, near 2 Inches long.

This is an annual Plant, which grows naturally in the *Archipelago*, from whence *Tournefort* sent the Seeds to the Royal Garden at *Paris*. The Seeds should be sown on a Bed of light Earth in Spring, where the Plants are designed to remain, and when they come up, should be thinned where they are too close, and kept clean from Weeds, which is all the Culture they require. In *June* they flower, and the Seeds ripen in Autumn.

The 8th Sort was discovered by Dr. *Tournefort*, in the *Levant*, from whence he sent the Seeds; this hath a perennial Root, and an annual Stalk, which rises upward of 2 Feet high, standing erect. The Leaves are composed of 5 or 6 Pair of small oblong Leaves, ranged along the Mid-rib, which is terminated by an odd one. The Foot Stalks of the Flowers are strong, and upward of 6 Inches in Length, supporting large Bunches of yellow Flowers, succeeded by short thick Pods about an Inch long. This flowers in *June* and *July*, and in warm Seasons the Seeds will ripen in Autumn; there is a Variety of this with large white Flowers.

This Sort is propagated by Seeds, which should be sown on a warm Border of light Earth in Spring, and when the Plants come up, they must be carefully cleaned from Weeds; when they are fit to remove, they should be transplanted into a warm Border, where they are to remain, shading them from the Sun till they have taken fresh Root, after which they require no farther Care in Summer, but to keep them clean from Weeds; in Autumn, when the Stalks are decayed, if the Surface of the Ground is covered with some old Tan to keep out the

the Frost, it will preserve the Roots. The 2d Year the Plants will flower, and, if the same Care is taken in Winter, the Roots may be continued some Years.

The 9th Sort was discovered by Father Plumier in America. I received the Seeds from Carthagena; this hath a slender twining Stalk, which is hairy, and of a brown Colour, twisting round any of the Shrubs which stand near it, whereby it rises 8 or 10 Feet high, and is garnished with winged Leaves, for the most Part composed of 5 oval Lobes, one Inch long, and Half an Inch broad, of a deep green. The Flowers come out by Pairs at each Joint, standing on very short separate Foot Stalks erect; they are large, and of a pale yellow; these are succeeded by taper jointed Pods, more than three Inches long, which are covered with short, soft, white, hairy Down, and stand erect. This Plant is propagated by Seeds, which should be sown early in Spring on a moderate hot Bed; when the Plants come up, they should be each transplanted into a Halfpenny Pot filled with fresh Earth, and plunged into a hot Bed of Tanners Bark, observing to shade them until they have taken Root; after which Time they should have Air and Water in Proportion to the Warmth of the Season, and when they have filled these Pots with their Roots, they should be shifted into Pots of a larger Size, and plunged into the hot Bed again, where they must remain until Autumn, when they should be removed into the Stove, and plunged in the Tan. These Plants must be constantly kept in the Bark Stove, and placed among Plants which require a moderate Heat; where they will thrive and flower, and should be supported by tall Sticks, round which they will twine as Hops do; for if they have not this Support, they will twist round other Plants and spoil them. These are very proper to place against an Espalier on the back Part of the Stove, amongst other climbing Plants, where they will make an agreeable Variety.

If they are carefully managed in Winter, they may be preserved 2 or 3 Years, and will annually flower in July, and sometimes produce ripe Seeds.

CORONOPUS. See Plantago.

CORTUSA. Lin. Gen. Plant. 181. [This Plant is so called from Cortusus, a famous Botanist, who first brought it into Use.] Bears Ear Sanicle.

The Characters are,

The Flower hath a small, spreading, permanent Empalement, indented at the Brim in 5 Parts; this hath one Wheel-shaped Petal, spreading open to the Bottom, and cut into 5 Parts at the Brim, having 5 prominent Tubercles at the Base. It hath 5 short obtuse Stamina, terminated by oblong erect Summits. In the Center is fixed an oval Germen, supporting a slender Style, crowned by a single Stigma. The Germen becomes an oval, oblong, pointed Capsule, having two longitudinal Furrows, and one Cell, opening with two Valves, and filled with small oblong Seeds.

The Species are,

8. CORTUSA calycibus corollâ brevioribus. Lin. Sp. Plant. 144. Bears Ear Sanicle, with an Empalement shorter than the Petal. This is the Cortusa Matthioli. Clus. Hist. 1. p. 307. Bears Ear Sanicle of Matthioli.

2. CORTUSA calycibus corollam excedentibus. Aen. Acad. 2. p. 340. Bears Ear Sanicle with an Empalement longer than the Petal.

The first Sort grows naturally on the Alps, the Moun-

tains in Austria, and in Siberia. This Plant sends out many oblong smooth Leaves a little indented on the Edges, and forms a Sort of Head, like the Auricula. The Foot Stalks of the Flowers come out in the Center of the Leaves; these rise about 4 Inches high, and support an Umbel of Flowers, each sitting on a slender separate short Foot Stalk; they are of a Flesh Colour, and spread open like the Auricula. It flowers in April, but doth not produce Seeds in the Gardens, for this Plant is with great Difficulty kept in a Garden. The only Method by which I could ever preserve them, has been by planting them in Pots, and placing them in a shady Situation, where they were duly watered in dry Weather; in this Place they constantly remained both Summer and Winter, for the Cold will not destroy them; the Earth for this Plant should be light, and not too rich; for Dung is very injurious to it. As this very rarely produces Seeds in England, the only Method to propagate it is, by parting the Roots as is practised for Auriculas; the best Time for this is about Michaelmas, soon after which the Leaves decay.

The 2d Sort is very like the first, but the Flowers are much less; this grows naturally in Siberia, but is with great Difficulty kept in a Garden.

CORYLUS. Lin. Gen. Plant. 953. Tournef. Inst. R. H. 581. The Hazel or Nut Tree.

The Characters are,

It hath male and female Flowers growing at remote Distances on the same Tree. The male Flowers are produced in long scaly Katkins, each Scale including a single Flower, having no Petals, but 8 short Stamina fastened to the Side of the Scale, and terminated by oblong erect Summits. The female Flowers are included in the future Bud, sitting close to the Branches; these have a thick two leaved Perianthium, torn on the Border, sitting under the Flower when it is small, but afterward is enlarged to the Size of the Fruit; it hath no Petal but a small round Germen occupies the Center, supporting two bristly Styles, which are longer than the Empalement, and are coloured, and crowned by two single Stigmas. The Germen becomes an oval Nut, shaved at the Base, and compressed at the Top, ending in a Point.

The Species are,

1. CORYLUS stipulis ovatis obtusis. Hort. Cliff. 448. Hazel Nut with oval blunt Stipulæ. This is the Corylus Sylvestris. C. B. P. 418. Wild Hazel Nut.

2. CORYLUS stipulis oblongis, obtusis, ramis erectioribus. Hazel with oblong blunt Stipulæ, and the Branches growing more erect. This is the Corylus sativa fructu oblongo. C. B. P. 418. The Filbert.

3. CORYLUS stipulis linearibus acutis. Hort. Cliff. 448. Hazel with narrow acute Stipulæ. This is the Corylus Byzantina. H. L. 191. Byzantine Nut.

The first of these Trees is common in many Woods in England, from whence the Fruit is gathered in Plenty, and brought to the London Markets by the Country People. This Tree is seldom planted in Gardens (except by Persons curious in Collections of Trees and Shrubs); it delights to grow on a moist strong Soil, and may be plentifully increased by Suckers from the old Plants, or by laying down their Branches, which in one Year's Time, will take sufficient Root for transplanting, and these will be much handsomer and better rooted Plants.

Plants than Suckers, and will greatly outgrow them, especially while young.

There is a Variety of this Fruit growing in great Clusters at the End of the Branches, which is distinguished by the Title of Cluster Nut, but as this is supposed to be only an accidental Variety from the Seed of the other, I have not distinguished it; this may be continued by Layers.

The 2d Sort is by many supposed to be only a feminal Variety from the first, improved by Culture, but this is very doubtful, for I have several Times propagated both from the Nuts, but never found them vary from one to the other, though they have altered in the Size and Colour of their Fruit, from the Sorts which were sown; but as the Shrubs of this grow more erect than those of the other, and the Stipulae are different in their Shape, so I have enumerated it as a distinct Sort; of this there are the red and white Filberts, both which are so well known, as to need no Description.

The 3d Sort grows naturally near *Constantinople*; the Nuts are large, roundish, and in Shape like those of the common Hazel, but are more than twice their Size. The Cups in which their Nuts grow, are very large, so as almost to cover the Nut, and is deeply cut at the Brim. This Sort is not common in *England*, but I take those large Nuts which are annually imported from *Barcelona*, to be of the same Kind, the Nuts being so like as not to be distinguished, when out of their Cups; as those of the *Spanish* Sort, come over naked, so I cannot with Certainty say how they essentially differ.

All these Sorts may be propagated by sowing their Nuts in *February*; which, in order to preserve them good, should be kept in Sand in a moist Cellar, where the Vermin cannot come at them to destroy them; nor should the external Air be excluded from them, which would occasion their growing mouldy.

The Manner of sowing the Seeds being well known to every one, I need not here mention it, especially since it is not the surest Way to obtain the Sorts desired; for they seldom prove so good as the Nuts which were sown, or at least not one in four of them; the Method of propagating them by Layers being the surest and most expeditious, is what I would recommend to every one who would cultivate these Trees for the Sake of their Fruits.

CORYMBUS [*Κόρυμβος*, Gr.] signifies among Botanists, round Clusters of Berries, as those of Ivy.

Jungius uses it to signify the Extremity of a Stalk, so subdivided and laden with Flowers, or Fruits, as to compose a spherical Figure.

It is also by modern Botanists used to signify a compound discous Flower, which does not fly away in Down, as the *Chrysanthemum*, *Daisy*, *Chrysocome*, &c. For these Kind of Flowers, being spread into Breadth, do, after a Sort, resemble an Umbrella, or Bunch of Ivy Berries.

COSTUS. *Lin. Gen. Plant.* 3.

The Characters are,

It hath a simple Spadix and Spatha, with a small Empalement, divided into 3 Parts, sitting on the Germen. The Flower hath 3 concave Petals, which are erect and equal, with a large oblong Nectarium of one Leaf, having two Lips, the lower being broad, and as long as the Petal. The upper is shorter, and Spear-shaped, changing to a Stamen;

this is fastened to the upper Lip of the Nectarium, to which adheres a bipartite Summit. The Germen is situated within the Receptacle of the Flower, which is roundish, supporting a slender Style, crowned by a compressed indented Stigma. The Germen afterward becomes a roundish Capsule with 3 Cells, containing several triangular Seeds.

We have but one Sort of this Plant, viz.

COSTUS. *Hort. Cliff.* 2. This is the *Costus Arabicus*. *C. B. P.* 36. *Arabian Costus*.

This hath a fleshy jointed Root, like that of Ginger, which propagates under the Surface as that doth; from which arise many round taper herbaceous Stalks, garnished with oblong smooth Leaves, embracing the Stalks like those of Reed; these Stalks rise near 2 Feet high, and out of the Center, the Club, or Head of Flowers is produced, which is near 2 Inches long, the Thickness of a Man's Finger, and blunt at the Top, composed of several leafy Scales, out of which the Flowers come; these have but one thin white Petal, which seldom continues longer than one Day before it fades, and is never succeeded by Seeds in this Country. The Time of its flowering is very uncertain, for sometimes it flowers late in the Winter, and at other Times it has flowered in Summer, so is not constant to any Season in *England*. It grows naturally in most Parts of *India*.

This is propagated by parting the Roots, the best Time for this is in Spring, before the Roots put out new Stalks. The Roots must not be divided too small, because that will prevent their flowering. They should be planted in Pots, filled with light Kitchen Garden Earth, and plunged into the Tan Bed in the Stove, where they should constantly remain, and may be treated as the Ginger, for which, see the Article *Anomum*.

The Roots of this Plant were formerly imported from *India*, and were much used in Medicine, but of late Years they have not been regarded, the Roots of Ginger being generally substituted for these.

COTINUS. See *Rhus*.

COTONEA MALUS. See *Cydonia*.

COTONEASTER. See *Mespilus*.

COTULA. *Lin. Gen. Plant.* 868. *Ananthocyclus*. *Vaill. Act. Reg. Scien.* 1719. Mayweed.

The Characters are,

It hath a Flower composed of hermaphrodite Florets in the Disk, and female half Florets, which form the Rays; these are included in one common convex Empalement, divided into several oval Parts. The hermaphrodite Florets are tubular, and cut into 4 unequal Parts at the Top; these have 4 small Stamina, terminated by tubular Summits, and have 2 obtuse Stigmas; these have one, small, oval, angular Seed to each. The female half Florets have an oval compressed Germen, supporting a slender Style, crowned by 2 Stigmas, but have no Stamina; these are succeeded by single Heart-shaped Seeds, plain on one Side, and convex on the other, with an obtuse Border.

The Species are,

1. COTULA foliis pinnatis-multifidis, corollis radio destitutis. *Hort. Cliff.* 417. Mayweed with many pointed, winged Leaves, and no Rays to the Flower. This is the *Chamæmelum luteum capite apophyllo*. *C. B. P.* 135. Yellow Chamomile with Heads having no Rays.

2. COTULA receptaculis subtus inflatis, turbinatis. *Hort. Cliff.* 417. Mayweed whose Receptacles are swollen and turbinated

turbinated beneath. This is the *Cotula Africana calice eleganter caeso*. Tourn. Inst. R. 495. African Mayweed with an elegant bluish Empalement.

3. *COTULA foliis lanceolato-linearibus, amplexicaulibus pinnatifidis*. Hort. Cliff. 417. Mayweed with narrow Spear-shaped Leaves embracing the Stalk, and having many Points. This is the *Cbrysanthemum exoticum minus, capite apbyllo, Chamæmeli nudi facie*. Breyn. Cent. 156. Smaller foreign Corn Marigold without Rays, having the Appearance of naked Chamomile.

The 1st Sort grows naturally in Spain, Italy, and the Archipelago; this is an annual Plant, which rises with a branching Stalk, half a Foot high, garnished with Leaves finely divided like those of Chamomile. The Flowers are produced singly at the End of the Branches, and are very like those of the naked Chamomile, but the Heads rise higher in the Middle like a Pyramid. This flowers in May and June, and the Seeds ripen in August. If the Seeds of this Sort are permitted to scatter, the Plants will come up in the Spring, and require no other Care, but to keep them clean from Weeds, and thin the Plants where they are too close.

The 2d Sort grows naturally at the Cape of Good Hope, from whence I received the Seeds; this is an annual Plant, sending out many branching Stalks which spread on the Ground, and are garnished with very fine divided Leaves, covered with a Lanugo, or Cotton. The Flowers are produced singly upon long Foot Stalks, arising from the Side of the Branches; these have a narrow Border of white Rays, with a pale yellow Disk. It flowers in June and July, and the Seeds ripen in Autumn. This Sort must be raised on a moderate hot Bed in Spring, and when the Plants have obtained Strength, they may be transplanted into a warm Border, where they will ripen their Seeds very well.

The 3d Sort is an annual Plant, which sends out trailing Stalks about 6 Inches long, garnished with succulent Leaves, in Shape like those of Buckshorn Plantain. The Flowers grow from the Divisions of the Stalks, on short weak Foot Stalks being destitute of Rays; they are of a Sulphur Colour, and appear about the same Time with the former. If the Seeds are sown on a warm Border, where the Plants are to remain, they will require no other Culture, but to keep them clean from Weeds. The Flowers of the two last Sorts stand erect, when they first appear, but so soon as the Florets are impregnated, and their Colour changes, the Foot Stalks become very flaccid toward the Top, and the Flowers hang downward, but when the Seeds are ripe, the Foot Stalks become stiff, and the Heads stand erect for the Wind to disperse the Seeds.

COTYLEDON. Lin. Gen. Plant. 512. Tourn. Inst. R. H. 90. Tab. 19. Navelwort,

The Characters are,

The Flower hath a small Empalement of one Leaf, divided into 5 Parts at the Top. It hath one Petal, and is Funnel-shaped, cut into 5 Parts at the Brim which turns backward. It hath 5 Germina, which have each a squamous, concave Neclarium at the Base, and each sustains a Style, crowned by a single Stamen; these are attended by 10 erect Stamina, terminated by erect Summits having 4 Furrows; the Germina become oblong, swelling Capsules, opening longitudinally with one Valve, and filled with small Seeds.

The Species are.

1. *COTYLEDON foliis cuculatis, serrato dentatis, alternis, caule ramoso, floribus erectis*. Lin. Sp. Plant. 429. Navelwort with hooded Leaves, sharply indented, and growing alternate, and a branching Stalk, with erect Flowers. This is the *Cotyledon major*. C. B. P. 285. Greater Navelwort, and the *Umbilicus Veneris*. Clus. H.

2. *COTYLEDON foliis oblongis spinoso mucronatis, caule spicato*. Lin. Sp. Plant. 429. Navelwort with oblong, pointed Leaves, ending with a Spine, and a spiked Stalk.

3. *COTYLEDON foliis ovalibus, crenatis, caule spicato*. Lin. Sp. Plant. 429. Navelwort with oval, crenated Leaves, and a spiked Stalk. This is the *Cotyledon Cretica, folio oblongo, fimbriato*. Hort. Eltb. 113. Tab. 95. Navelwort of Crete with an oblong, fringed Leaf.

4. *COTYLEDON foliis semiglobosis*. Hort. Cliff. 176. Navelwort with semiglobular Leaves. This is the *Cotyledon Capensis, folio semiglobato*. Hort. Eltb. 112. Tab. 94. Navelwort of the Cape, with a semiglobular Leaf.

5. *COTYLEDON foliis subrotundis, planis integerrimis*. Hort. Cliff. 276. Navelwort with roundish, plain, entire Leaves. This is the *Sedum Africanum frutescens, incanum, orbiculatis foliis*. H. L. 349. Shrubby African hairy Houseleek, with roundish Leaves.

6. *COTYLEDON caule ramossissimo, foliis rotundis, planis, marginibus purpureis*. Navelwort with a branching Stalk, round, plain, hairy Leaves, with purple Edges.

7. *COTYLEDON major, arborefcens Afra, foliis orbiculatis, glaucis, limbo purpureo, & maculis viridibus ornatis*. Boerb. Ind. alt. 1. 287. Greater African Tree Navelwort with round, gray Leaves, having purple Edges, and garnished with deep green Spots.

8. *COTYLEDON caule ramoso succulento, foliis ovatis, planis, acuminatis oppositis semiamplexicaulibus*. Navelwort with a succulent branching Stalk, and oval, plain, pointed Leaves, half embracing the Stalk.

9. *COTYLEDON Africana frutescens, folio longo & angusto, flore flavescente*. Com. Rar. Plant. 23. Tab. 23. Shrubby African Navelwort, with long, narrow, Leaves, and a yellowish Flower.

10. *COTYLEDON foliis laciniatis, floribus quadrifidis*. Hort. Cliff. 175. Navelwort with cut Leaves, and four pointed Flowers. *Cotyledon Afra, folio crasso lato laciniato, flosculo aureo*. Boerb. Ind. African Navelwort with a broad, thick, cut Leaf, and a golden Flower.

The first Sort, which is that used in Medicine, grows on old Walls in divers Parts of England, particularly in Shropshire and Somersetshire, where it greatly abounds on old Buildings, and on rocky Places; but is not often found wild near London, nor often cultivated in Gardens; this hath many round succulent Leaves, whose Foot Stalks are placed almost in the Center, so as to resemble a Target. These are alternately sawed on their Edges, which frequently turn inward; the upper Surface of the Leaves are hollowed in the Middle, where the Foot Stalks are joined on the lower Side, so as to resemble a Navel; from whence the Plant was titled Navelwort. From between the Leaves arise the Foot Stalks of the Flowers, which in some Places grow near 3 Feet high, and in others not more than 6 Inches, their lower Part being garnished with Leaves, and their upper Part with Flowers, which stand close to the Side of the Branches, and grow erect; they are of a whitish yellow Colour and appear

appear in *June*. It requires a dry rubbishy Soil, and a shady Position: This is a biennial Plant, so after it has perfected Seed, the Plant decays; but if the Seeds are scattered on Walls, and old Buildings, as soon as it is ripe, or if the Seeds are permitted to fall upon such Places, the Plants will come up, and thrive much better than when they are sown in the Ground; and when once the Plants are established upon an old Wall or Building, they will sow their Seeds, and maintain their Place, better than when cultivated with more Care.

The 2d Sort grows naturally in *Siberia*, from whence it was brought to the Imperial Garden at *Petersburgh*. This was sent me by Dr. *Amman*. It is a low Plant, in Shape like the *Housleek*, but the Leaves are longer and terminate in soft Spines. The Flower Stalks rise about 4 Inches high, and support 4 or 5 whitish Flowers, cut at the Brim into 5 Parts. These appear in *April*, and sometimes succeeded by Seeds in *England*. This Sort requires a very shady Situation; for if exposed to the Sun in Summer, the Plants will soon decay. It is propagated by Offsets like the *Housleek*, and requires a pretty strong Soil.

The 3d Sort grows naturally in the *Levant*, this hath a fibrous Root, from which is produced a single upright succulent Stalk, garnished with oblong, thick succulent Leaves placed alternate, which are sawed on their Edges. The upper Part of the Stalk is garnished with purplish Flowers, growing in a loose Spike, 2 or 3 being joined on the same Foot Stalk which is very short. The Flowers appear in *June*, and the Seeds ripen in Autumn. It is a biennial Plant, which decays soon after the Seeds are ripe. If this Sort is sown upon a Wall, it will thrive better than in the Ground, and be less liable to suffer by Frost, so that where the Seeds scatter themselves in such Situations, the Plants thrive better than when they are cultivated.

The 4th Sort grows naturally at the *Cape of Good Hope*. This hath a thick succulent Stalk, which rarely rises above a Span high, dividing into many Branches; these are garnished with short thick succulent Leaves, very convex on their under Side, but plain on their upper, not more than half an Inch long, and a Quarter broad, of a grayish Colour spotted over with small green Spots, and sit close to the Branches. The Foot Stalks of the Flower rise from the Top of the Branches, and are 6 Inches long, and support 5 or 6 Flowers, which come out alternate from the Side, sitting very close to the Stalks, they are tubular, and cut into 5 Parts at the Top, these are greenish with purple Tips. It flowers in *June* and *July*, but never produces Seeds in *England*.

The 5th Sort grows naturally on dry gravelly Spots, at the *Cape of Good Hope*. It hath a thick succulent Stalk, which by Age becomes ligneous, and rises 3 or 4 Feet high, sending out crooked Branches, which grow irregular; these are garnished with thick fleshy succulent Leaves about 2 Inches long and near as wide toward the Top, they are narrow at the Base, and rounded at the Top, of a Sea green Colour with a purple Edge, which is frequently irregularly indented. The Flowers grow on thick succulent Foot Stalks, which arise from the End of the Branches, and are near a Foot long, naked, and supporting 8 or 10 Flowers, growing in an irregular Umbel at the Top; these are of a pale yellow Colour,

having long Tubes which hang downward, and cut into 5 Parts at the Brim, which turn backward, the Stamina and Style being longer than the Tube of the Flower, hanging downward. This Sort flowers in *July*, *August*, and *September*, but doth not ripen Seeds in *England*.

The 6th Sort is also a Native of the *Cape of Good Hope*, this hath a short, thick, succulent Stalk, which rarely rises more than a Foot high, branching out on every Side, so as to spread over the Pots in which they are planted. These become woody by Age, and are closely garnished with thick round Leaves of a grayish Colour with purple Borders. They are plain on their upper Side, but convex on their under, and very fleshy, of an herbaceous Colour within, and full of Moisture. This Sort hath not flowered in *England*, so far as I can learn; for I have kept Plants of it which were twenty Years old, but never attempted to flower. It is undoubtedly a different Sort from the former, although they have been supposed to be the same by some Writers.

The 7th Sort is somewhat like the 6th; but the Stalks rise higher, the Leaves are much larger, and shaped more like those of the 5th, but are spotted on their upper Side with great Numbers of dark green Spots; they have a deep Border of purple on their Edges, and sit close to the Branches. This hath not yet flowered in *England*. It is also a Native of *Aethiopia*.

The 8th Sort hath been of late Years introduced into the Gardens in *Holland*, from the *Cape of Good Hope*, where it grows naturally. And was sent me by Dr. *Adrian Van Royen*. This rises with a succulent Stalk near 3 Feet high, which divides into many Branches, growing erect; these are garnished with oval, succulent Leaves placed by Pairs opposite; they are of a lively green, and end in Points, and half embrace the Stalks with their Base. This Sort hath not as yet produced any Flowers in *England*.

The 9th Sort grows on rocky Places at the *Cape of Good Hope*, from whence it was first brought to the Gardens in *Holland*, and hath since been spread into most Parts of *Europe*. This hath a short, greenish succulent Stalk, which seldom rises more than a Span high, dividing into several irregular Branches, garnished with thick, succulent Leaves, 4 Inches long, half an Inch broad, and as much in Thickness, having a broad concave Furrow on their upper Side, running almost their whole Length, and are convex on their under Side, of a bright green with a purple Tip. The Foot Stalks of the Flowers are produced at the End of the Branches, and rise near a Foot high, having here and there an oblong pointed Leaf, growing on their Side. The Flowers stand on short Foot Stalks, which branch out from the principal Stem; these are yellow, having long Tubes, cut at the Top into 5 Parts, and reflexed backward. The Flowers of this Sort hang downward, and the Stamina are longer than the Tube of the Flower; the reflexed Parts of the Petal are tipped with purple. Dr. *Linnaeus* has supposed this to be the same with the 5th Sort; but whoever has seen both Plants, cannot doubt of their being distinct Species.

The 10th Sort grows naturally in the warm Parts of *Africa*, so is much more tender than either of the other Sorts; this rises with an upright Stem about a Foot high,

high, which is jointed and succulent, garnished with broad Leaves, deeply cut on their Edges; they are of a grayish Colour, placed opposite and almost embrace the Stalks with their Base. The Foot Stalks of the Flowers arise from the End of the Branches which are about six Inches long, sustaining 7 or 8 small Flowers of a deep yellow Colour, divided into 4 Parts almost to the Bottom. The Stamina of these Flowers, are not longer than the short Tube. This flowers at different Seasons, but never produces any Seeds in England.

This Sort requires a warm Stove to preserve it through the Winter in England, nor should it be exposed abroad in Summer; for if it receives Wet, the Stalks are very subject to rot, so that it should constantly remain either in the Stove, or in Summer placed in an airy Glass Case, with other tender succulent Plants, where it may have free Air in warm Weather, and be screened from Cold and Wet; but in Autumn it must be removed into the Stove, where it should be kept in a moderate Temperature of Warmth. This is propagated by Cuttings, taken off in Summer, and planted in small Pots, and plunged into a moderate hot Bed; when they have taken Root, they should be removed into the Stove. This Plant must have but little Water, especially in Winter.

The African Kinds are all of them propagated by Cuttings in any of the Summer Months, which should be laid in a dry Place for a Week or more after they are cut off, before they are planted; for these abound with Juice through every Part of the Plant, which will certainly rot the Cuttings, if they are not suffered to lie out of the Ground, that the wounded Part may heal over, and the great Redundancy of Sap evaporate. The Soil in which these Plants thrive best, is one third fresh light Earth from a Pasture, one third Sand, and the other third Part Lime Rubbish, and rotten Tan, in equal Quantities; these should be well mixed, and laid in a Heap 6 or 8 Months before it is used; turning it over five or six times, that the Parts may the better incorporate; and before it is used, it will be proper to pass it through a Screen, to separate the large Stones, Clods, &c.

Having prepared the Earth, and your Cuttings being in fit Order for planting, you must fill as many Half-penny Pots with Earth as you have Cuttings; then put one Cutting in the Middle of each Pot about two Inches deep or more, according to their Strength; then give them a little Water to settle the Earth close about them, and set the Pots in a warm shady Place for about a Week, to prepare the Cuttings for putting forth Roots; after which they should be plunged into a moderate hot Bed of Tanners Bark, which will greatly facilitate their rooting; but observe to give them Air, by raising the Glasses at all Times when the Weather will permit; as also to shade the Glasses in the Heat of the Day.

In about a Month after planting, they will be rooted, when you must begin to expose them to the open Air by Degrees; first drawing the Pots out of the Tan, and setting them on the Top, then raise the Glasses very high in the Day Time; and in about a Week after remove the Pots into a Green-house, and there harden them for another Week; after which they may be exposed to the open Air in a well defended Place, observing not to set them in a Place too much exposed to the Sun, until they have been inured to the open Air some Time.

In this Place the Plants may remain until the Beginning of October; when you should remove them into the Conservatory, placing them as near the Windows as possible at first, letting them have as much free open Air as the Season will permit, by keeping the Windows open whenever the Weather is good; and now you must begin to abate your Waterings, giving it to them sparingly; but you should not suffer its Leaves to shrink for Want of Moisture, which is another Extreme some People run into for Want of a little Observation; and when they are suffered to shrink for Want of sufficient Moisture to keep their Vessels distended, they are rendered incapable of discharging this Moisture whenever they receive it again. This Sort should be placed in a moderate Stove in Winter, nor must it be set abroad till Midsummer; for it is much tenderer than any of the others.

The best Method to treat these Plants is, to place them in an open, airy, dry Glass Case, among Ficoides's and African Houseleeks, where they may enjoy as much Sunshine as possible, and have a free dry open Air; for if they are placed in a green House among shrubby Plants, which perspire freely, it will fill the House with damp Air, which these succulent Plants are apt to imbibe; and and thereby becoming too replete with Moisture, often cast their Leaves; and many Times their Branches also decay, and the whole Plant perishes.

COURBARIL. See Hymenæa.

COWSLIP. See Primula.

CRAB-TREE. See Malus.

CRAMBE. Lin. Gen. Plant. 739. Tourn. Inst. R. H. 211. Tab. 100. [Крэмбъ, Gr.] Sea-Cabbage.

The Characters are,

The Empalement of the Flower is composed of 4 oval concave Leaves which spread open; the Flower hath 4 Petals, placed in Form of a Cross, which are large, obtuse, and spread open; it hath six Stamina, two of which are the Length of the Empalement, the other four are longer, and bifid at their Points; these are terminated by single Summits, which branch into Threads on their Outside. The Petals have Honey Glands on their Inside longer than the Stamina. It hath an oblong Germen, but no Style, crowned by a thick Stigma. The Germen becomes a round dry Capsule, with one Cell, enclosing one roundish Seed.

The Species are,

1. CRAMBE foliis cauleque glabris. Pl. Suec. 570. Sea Cabbage with smooth Stalks and Leaves. This is the *Crambe maritima brassicæ folio*. Tourn. Inst. 211. Maritime Cabbage, with a Colewort Leaf.

2. CRAMBE foliis profundè laciniatis, caule erecto, ramoso. Sea Cabbage with Leaves deeply cut, and an upright, branching Stalk.

3. CRAMBE foliis scabris, caule glabro. Lin. Sp. Plant. 671. Sea Cabbage with rough Leaves, and a smooth Stalk. This is the *Crambe foliis & foliolis alternatim pinnatifidis*. Prod. Leyd. 330. Sea Cabbage whose Leaves and smaller Segments, are alternately pinnatifid.

4. CRAMBE foliis cauleque scabris. Hort. Upsal. 193. Sea Cabbage with rough Stalks and Leaves. This is the *Rapistrum maximum rotundifolium monospermum*. Corn. Canad. Greatest round leaved Bastard Rape with a single Seed.

5. CRAMBE foliis laciniatis, laciniis oppositis, integerrimis, foliis cauleque glabris. Sea Cabbage with cut Leaves,

Leaves, whose Jags are opposite and entire, and smooth Stalks and Leaves. This is the *Rapistrum Orientale*, *Acanthi folio*. Eastern Bastard Rape with a Bear's breech Leaf.

The first Sort sends out many broad smooth Leaves, deeply jagged on their Sides in obtuse Segments, of a grayish Colour, spreading near the Ground; between these arise a thick smooth Foot Stalk about a Foot high, which spreads out into many Branches, which have at each Joint one Leaf of the same Form of those below, but much less: These Foot Stalks subdivide again into many smaller, garnished with white Flowers growing in a loose Spike, composed of four concave Petals placed in Form of a Cross; these are succeeded by round dry Seed Vessels, about the Size of large Pease, having a single Seed in each. It flowers in *June*, and the Seeds ripen in Autumn. The Roots of this Sort creep under Ground, whereby it propagates very fast.

The Seeds of the 2d Sort were sent me from *Petersburgh*. This hath a perennial Root, which sends out several oblong smooth Leaves, pointed, and irregularly cut on their Sides, into acute Segments almost to the Mid-rib; these are very smooth and of a Sea-green Colour; between these arise the Stalk, which grows 3 Feet high, garnished below by oblong pointed Leaves acutely indented on their Edges. The Stalks branch out into many smaller, and these subdivide again into less, garnished with loose Spikes of white Flowers like those of the first Sort, and succeeded by Seeds of the same Form. This differs greatly from the first, in the Shape of its Leaves, which are longer, ending in Points, and the Segments do the same, whereas those of the other are blunt, and not half so deeply cut. The Stalks rise more than twice the Height of the first, branch out more, and the Branches grow more erect. These Differences are constant, where the Plants grow in the same Soil.

The 3d Sort grows naturally in the *East*. This hath a perennial Root, from which arise many Leaves in the Spring, which are alternately divided to the Mid-rib, and these Divisions are again alternately cut on their Edges into many Points, so that they have the Appearance of winged Leaves, and are of a grayish Colour. The Stalks rise about 2 Feet high, and divide into many Branches, terminated by loose Panicles of small white Flowers placed in Form of a Cross, succeeded by small round Capsules, each containing a single Seed. This flowers in *June*, and the Seeds ripen in Autumn.

The 4th Sort is an annual, which grows naturally in *Spain* and *Italy*. This rises with a very branching Stalk near 3 Feet high, garnished with roundish Heart-shaped Leaves indented on their Edges, standing on long Foot Stalks, the Branches subdivide into many slender ones, which end in long loose Spikes of small white Flowers, succeeded by small round dry Seed Vessels, which contain a single Seed. The Leaves and Stalks are rough. It flowers in *June*, and the Seeds ripen in Autumn.

The 5th Sort hath a perennial Root; this grows naturally in the *Levant*, from whence Dr. *Tournefort* sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and most of the curious Gardens in *Europe* have been supplied with it from thence. The Leaves of this are more than a Foot long, and almost triangular, but are deeply cut in on the Sides, into opposite Segments,

which terminate in Points. These are smooth and of a Sea-green Colour, spreading near the Ground. The Stalks rise more than 2 Feet high, branching upward into many smaller, which are naked below, but end in loose Spikes of whitish yellow Flowers, which are small, and are succeeded by small round Seed Vessels inclosing a single Seed.

The first of the Species is found wild upon Sea Shores in divers Parts of *England*; but particularly in *Suffex* and *Dorsetshire* in great Plenty; where the Inhabitants gather it in Spring to eat, preferring it to any of the Cabbage Kind; as it generally grows upon the gravelly Shore, where the Tide flows over it, the Inhabitants observe where the Gravel is thrust up by the Shoots of this Plant, and open the Gravel, and cut them before they come out, and are exposed to the open Air, whereby the Shoots appear as if they were blanched; and when they are cut so young, they are very tender and sweet; but if they are suffered to grow till they are green, they become tough and bitter.

This Plant may be propagated in a Garden, by sowing the Seed, soon after it is ripe, in a sandy or gravelly Soil, where it will thrive exceedingly, and increase greatly by its creeping Roots, which will soon overspread a large Spot of Ground, if encouraged; but the Heads will not be fit to cut until the Plants have had one Years Growth; and in order to have it good, the Bed in which the Plants grow, should, at *Michaelmas*, be covered over with Sand or Gravel about four or five Inches thick, which will allow a proper Depth for the Shoots to be cut before they appear above Ground; and if this is repeated every Autumn, as is practised in earthing Asparagus Beds, the Plants will require no other Culture. This may be cut for Use in *April* and *May*, while it is young; but if the Shoots are suffered to remain, they will produce fine regular Heads of white Flowers, which appear very handsome, and will perfect their Seeds, by which they may be propagated.

The other Sorts are only preserved in curious Gardens for Variety, but are not of any Use or Beauty. The perennial Sorts may be propagated as the first.

CRANE'S-BILL. See *Geranium*.

CRANIO-LARIA. *Lin. Gen. Martynia. Houst.*

The Characters are,

The Flower hath a permanent Empalement, composed of 4 short narrow Leaves, which spread open with a large swollen Hood, cut longitudinally on the Side. The Flower hath one Petal which is unequal, having a very long narrow Tube, whose Brim is divided into two Lips, the upper being roundish and entire, but the under is divided into 3 Parts, the middle Segment being the largest. It hath 4 Stamina, two of which are the Length of the Tube, and two are shorter; these are terminated by single Summits; at the Bottom of the Tube is situated an oval Germen, supporting a slender Style, crowned by an obtuse thick Stigma. The Germen becomes an oval leathery Fruit, pointed at both ends, opening with two Valves, inclosing a depressed, woody Nut, pointed at both Ends and recurved, having 2 or 3 Furrows, so as to resemble a Skull, opening in two Parts.

The Species are,

1. CRANIO-LARIA foliis cordatis, angulatis. *Lin. Sp. Plant*, 618. *Cranio-laria* with Heart-shaped, angular Leaves. This is the *Martynia annua, villosa, & viscosa, acris*.

aceris folio, flore albo, tubo longissimo. Houst. Mss. Annual, hairy, viscid *Martynia*, with a Maple Leaf, white Flower, and very long Tube.

2. *CRANIOLARIA foliis lanceolatis, dentatis. Lin. Sp. Plant.* 618. *Craniolaria* with Spear-shaped, indented Leaves. This is the *Gesnera arborescens amplo flore fimbriato & maculoso. Plum. Nov. Gen.* 27. Tree *Gesnera* with an ample, fringed Flower.

The first Sort was discovered in the Neighbourhood of *Cartbagena* in *New Spain*. This is an annual Plant, which rises with a branching Stalk, about two Feet high, the Branches come out by Pairs opposite, which are hairy and viscid; the Leaves also are placed opposite upon very long Foot Stalks; these are of different Shapes, some of them are divided into five Lobes, others into three, and some are almost Heart-shaped, ending in acute Points; these are hairy, and clammy. The Flowers are produced from the Side, and also at the End of the Branches, standing on short Foot Stalks, having an inflated Sheath or Cover, out of which the Tube of the Flower arises, which is 7 or 8 Inches long, and very slender, but at the Top is divided into two Lips, the under being large, and divided into three broad Segments, the Middle being larger than the other two; the upper Lip is roundish and entire; the Flowers are succeeded by oblong Fruit, having a thick dry Skin, which opens lengthways, inclosing a hard, furrowed Nut, with two recurved Horns. This is an annual Plant, whose Seeds must be sown on a hot Bed in Spring, and when the Plants are fit to remove, they should be each planted in a small Pot, filled with light fresh Earth, and plunged into a moderate hot Bed, carefully shading them from the Sun, till they have taken new Root, after which they should have free Air admitted in Proportion to the Warmth of the Season, to prevent their drawing up weak, and treated as other tender exotick Plants, being too tender to thrive in the open Air in *England*, so that when they are grown too large to remain under the Frames, they should be removed into the Bark Stove, and plunged in the Tan Bed, where they will flower in July, and with good Management often perfect Seeds in Autumn. But the Seeds of this Plant should remain on till they drop, otherwise they will not grow; for the outer Covers of these Seeds split open and drop off, like those of the Almond, before the Seeds are fully ripened.

The 2d Sort grows naturally at the *Havannab*, and in other Islands in *America*. This rises with a shrubby Stalk 10 or 12 Feet, dividing upward into a few Branches garnished with Spear-shaped Leaves, cut on their Edges, these are soft and hairy. The Flowers are produced from the Side of the Branches, growing several together on the same Foot Stalk, they are shaped like those of the Foxglove of a greenish yellow Colour, with brown Spots on the Inside; the Flowers have a swelling Tube which is recurved, and the Brim is slightly divided into five unequal Segments. These appear in July, but are not succeeded by Seeds in *England*.

This Sort is propagated by Seeds, which must be procured from the Countries where it grows naturally, and should be sown on a hot Bed in Spring; when the Plants are fit to remove, they should be each planted in a small Pot, filled with light Kitchen Garden Earth, and plunged into a fresh hot Bed, where they must be shaded from

the Sun till they have taken fresh Root, then they must have Air admitted according to the Warmth of the Season, and frequently watered during the Heat of Summer. In Autumn they must be removed into the Bark Stove, and plunged in the Tan Bed; during the Winter Season, they should not have much Water, and may be treated as other tender Plants from those Countries. The Plants seldom flower in *England* till the third Year, and as they do not produce Seeds here, it is with difficulty the Sort is preserved in the *European* Gardens, as there is no other Method of propagating them but by Seeds.

CRASSULA. Dillen. Hort. Elth. 114. *Lin. Gen. Plant.* 352. Lesser Orpine or Live ever. This Name was formerly applied to the *Anacampseros* or Orpine.

The Characters are,

The Flower hath a five leaved Empalement; the Corolla consists of 5 narrow Petals, joined at their Base, but reflexed, and spread open, at the Brim: In the Bottom of the Tube are situated 5 Nectaria, and there are 5 Stamina situated round these, which arise from the Bottom of the Tube, and extend to the Brim. At the Bottom of the Tube are placed 5 oblong, pointed Germina; these become five Capsules, opening lengthways, and filled with small Seeds.

The Species are,

1. *CRASSULA foliis planis cartilagineo-ciliatis, basi connato vaginantibus. Vir. Cliff.* 26. Lesser Orpine, with plain Leaves, having stiff Edges set with silver Hairs, and their Base surrounding the Stalk like Sheaths. This is the *Cotyledon Africana frutescens, flore umbellato Coccineo. Com. rar.* 24. Shrubby African Navelwort, with Umbels of scarlet Flowers.

2. *CRASSULA foliis lanceolato-subulatis sessilibus connatis, canaliculatis; subtus convexis. Hort. Cliff.* 116. Lesser Orpine with Spear-shaped, awl-fashioned Leaves surrounding the Stalks with their Base, channeled on their upper Side, and convex on their under. This is the *Crassula altissima perfoliata. Dill. Hort. Elth.* 114. Tallest *Crassula* with perfoliate Leaves.

3. *CRASSULA foliis oppositis, obtusis ovatis, integerrimis, hinc angustioribus. Hort. Cliff.* 496. Lesser Orpine with oval, blunt Leaves, placed opposite, which are entire, and narrow at their Base. This is the *Crassula Anacampserotis folio. Hort. Elth.* 115. Tab. 65. *Crassula* with an Orpine Leaf.

4. *CRASSULA foliis oppositis, oblongis, planiusculis, distinctis, ciliatis. Hort. Cliff.* 496. Lesser Orpine with oblong, plain Leaves placed opposite, which are bordered with silver Hairs.

5. *CRASSULA foliis oppositis, patentibus, scabris. Lin. Sp. Plant.* 283. Lesser Orpine, with rough, spreading Leaves growing opposite. This is the *Cotyledon Africana frutescens, foliis asperis, angustis, acuminatis, flore virescente. Mart. Cent.* 24. Shrubby African Navelwort, with narrow, rough, pointed Leaves, and a greenish Flower.

6. *CRASSULA foliis subulatis, radicatis, caule nudo. Hort. Cliff.* 116. Lesser Orpine with Awl-shaped Leaves, which put out Roots, and a naked Stalk. This is the *Crassula Caesposa longifolia. Hort. Elth.* 116. Tab. 98. *Crassula* with a long Onion Leaf.

7. *CRASSULA caule flaccido, foliis connatis, cordatis, succulentibus, floribus confertis terminalibus.* Lesser Orpine with a weak Stalk growing through the Leaves,

which are Heart-shaped, and succulent, and Flowers growing in Clusters at the End of the Branches.

8. *CRASSULA foliis longis, teretibus, alternis, caule fruticoso, ramoso.* Lesser Orpine with long, taper Leaves, placed alternate, and a branching, shrubby Stalk.

9. *CRASSULA caule flaccido, prolifero, determinatè-foli-oso, foliis patentissimis, imbricatis.* Hort. Cliff. 496. Lesser Orpine with a proliferous, weak Stalk, which is leafy, and Leaves placed in the Manner of Tiles, and spreading open. This is the *Sedum Afrum, saxatile, foliis sedi vulgaris, in rosam verè Compositis.* Boerb. Ind. Alt. 1. 287. African Rock Housleek, with Leaves like the common, and spreading like a Rose.

10. *CRASSULA caule flaccido repente, foliis oppositis.* Lin. Sp. Pl. 283. Lesser Orpine with a weak, creeping Stalk, and Leaves placed opposite, and a shrubby, succulent Stalk. *Crassula portulacæ facie repens.* Hort. Eltb. Creeping *Crassula* with the Appearance of Purslane.

11. *CRASSULA foliis obversè-ovatis, oppositis, caule fruticoso, succulento.* Lesser Orpine with obverse, oval Leaves, placed opposite. This is the *Crassula portulacæ facie arborescens.* Hort. Eltb. 120. Tab. 90. Tree-like *Crassula* with the Appearance of Purslane.

The 1st Sort hath a round reddish Stalk, jointed, rising about 3 Feet high, which divides upward into many irregular Branches; these are garnished with oblong, plain Leaves placed opposite, having a gristly Border, set with small silver Hairs; and closely embrace the Stalks with their Base, and form a Sort of Sheath or Cover to it. The Flowers are produced at the End of the Branches, in close Umbels, sitting very close to the End of the Branches, these are Funnel-shaped, having pretty long Tubes cut at the Top into five Parts which spread open; these are of a fine scarlet Colour and stand erect; they usually flower in *July* or *August*, but never produce any Seeds in *England*. This is propagated by Cuttings during any of the Summer Months; these should be taken off about a Week before they are planted, and layed in a dry Place that the wounded Part may heal over; then they should be each planted in a small Pot filled with light sandy Earth, and plunged into a moderate hot Bed, giving them but little Water; in about six Weeks these will have put out Roots, and begin to grow, when they should have a large Share of Air admitted to them, and must be gradually inured to bear the open Air, into which they should be removed, placing them in a sheltered Situation, where they may remain till Autumn; when they must be removed into a dry airy Glass Case, where they may enjoy the Sun as much as possible, and be screened from the Wet and Cold: In warm dry Weather during the Summer Months while they are abroad, these Plants should be gently watered 2 or 3 times a Week, but in Winter they should have very little Water, lest it rot their Stems. They require no artificial Heat in Winter, but must be secured from Frost and Wet.

The 2d Sort will rise with an upright Stalk, 10 or 12 Feet high, if not broken or injured, but it will require Support; for the Stalks being slender, and the Leaves very weighty they are very subject to break, if exposed to the Wind. The Leaves of this Plant are about 3 Inches long, they are hollowed on the upper Side, and have a convex Ridge on their lower, and are placed op-

posite, surrounding the Stalks with their Base, and these alternately cross each other. They are very thick, succulent, and of a pale green Colour, ending in acute Points; at the Top of the Stalk the Flowers are produced in large Clusters; these are of a whitish herbaceous Colour, having short Tubes, which are cut into 5 Parts at the Brim, which spread open. The Stalk which sustains the Flowers is pretty thick and succulent, generally turning first downward, and then upward again, almost in the Form of a Syphon. It flowers in *July*, but doth not produce Seeds here. This Sort is propagated by Cuttings in the same Manner as the first, and the Plants require the same Treatment.

The 3d Sort rises with a weak succulent Stalk about 2 Feet high, sending out many irregular Branches, garnished with oblong, oval, thick Leaves, plain on their upper Side, but convex below, of a deep green, and their Borders set with a few silvery Hairs. The Flower Stalk rises from the Top of the Branches, and is from 4 to 6 Inches long, putting out several Side Branches, which grow erect; these are terminated by large Clusters of small greenish Flowers in *June* and *July*.

This is propagated by Cuttings in the same Manner as the two former, but being more hardy, should not be so tenderly treated; for if the Cuttings of this are planted in a Border of light Earth, they will put out Roots, and may afterward be taken up and potted.

The 5th Sort hath a very weak succulent Stalk, about a Foot and a Half high, dividing upward into small Branches, garnished with thin rough Leaves, which are flat, near 2 Inches long, and a Quarter broad at their Base, gradually narrowing to a Point; these are rough, placed opposite, and embrace the Stalks with their Base. The Flowers come out in small Clusters at the End of the Branches; these are small, and of an herbaceous Colour, so make no Figure; they appear in *June* and *July*. This may be propagated by Cuttings, which may be treated as the 4th Sort.

The 6th Sort never rises with a Stalk, but the Leaves come out close to the Ground, forming a Sort of Head, these are taper and succulent, ending in Points, and frequently put out Roots; out of the Center of these arise the Flower Stalk, which grows about six Inches high, and branches into two or three Parts upward, each being terminated by Clusters of greenish Flowers, which make no great Appearance. It flowers in *May*, and sometimes again in the latter Part of Summer.

This is propagated by taking off the Heads, or Side Offsets, which should be laid to dry 3 or 4 Days before they are planted, then they may be treated as the other hardier Sorts before-mentioned.

The 7th Sort hath been lately brought to *Holland*, from the *Cape of Good Hope*; it was sent me by Dr. *Van Royen*; this hath very slender Stalks, which are reddish, and full of Joints; these trail upon the Ground, unless supported, and are closely garnished with thick, succulent, Heart shaped Leaves, placed opposite, which are closely joined at their Base, so that the Stalks run through them; they are of a grayish Colour; the Stalks are divided, and grow about 8 or 9 Inches long, terminated by Clusters of small white Flowers, sitting very close to the Top of the Stalks; these appear in Spring, and also again in the latter Part of Summer. It is propagated by Cuttings.

Cuttings, as the other hardier Sorts, and may be treated in the same Way.

The 8th Sort was sent me from *Leyden*, by the same Gentleman; this rises with a shrubby Stalk, 4 or 5 Feet high, dividing into many Branches, which at first are taper and succulent, but by Age become ligneous; these are garnished with very slender, taper, succulent Leaves, near 3 Inches long, and are flaccid, generally turning downward, especially in Winter, when they are in the House; but as it hath not as yet flowered here, I can give no farther Description of it. This is equally hardy with the former Sorts, and takes easily from Cuttings, so may be treated in the same Way.

The 9th Sort is a low Plant, with the Appearance of *Houfleeck*, having open spreading Heads, which grow on the Ends of very slender trailing Stalks, which are produced in Plenty on every Side the Parent Plant, like the childing *Marigold*. The Flower Stalks arise from the Center of these Heads, which are naked, about 4 Inches long, and are terminated by close Clusters of herbaceous Flowers, which appear in different Seasons of the Year. This Plant propagates very fast by the Side Heads, which come out from the Parent Plant, which frequently put out Roots as they trail on the Ground, so may be taken off, and potted, during any of the Summer Months; this is equally hardy with the former Sorts, so the Plants may be treated in the same Way.

The 10th Sort hath very slender, trailing, succulent Stalks, of a reddish Colour, which put out Roots at the Joints as they lie upon the Ground. The Stalks and Leaves of this Sort have the Appearance of *Purslane*, but trail on the Ground like *Chickweed*. The Flowers are produced in small Clusters at the End of the Branches; they are white, with a Blush of purple at their Brim; they appear in Summer at different Times, and are often succeeded by Seeds. This Sort is easily propagated by its trailing Branches, and the Plants require the same Treatment as the other hardy Sorts.

The 11th Sort rises with a very thick strong succulent Stalk, 3 Feet high, sending out Branches on every Side, so as to form a Kind of Pyramid, the lower Branches being extended to a great Length, and the other diminishing gradually to the Top; these are of a red, or a purplish Colour, and very succulent; they are garnished with roundish succulent Leaves, very like those of *Purslane*, from whence the Gardeners have titled it the *Purslane Tree*.

This Sort hath not flowered in *England*, though it has been many Years in the Gardens, so that we are not sure if it is properly ranged in this Genus, but from the Appearance it seems nearly allied to some of the other Species, on which Account Dr. *Dillenius* has placed it here.

It is propagated with great Facility by Cuttings, planted during any of the Summer Months; these should be laid to dry for some Days before they are planted, that the wounded Part may be healed over, otherwise they will rot. This Sort is somewhat tenderer than the four Sorts last mentioned, so must be placed in a warm Glass Case in Winter, where it may enjoy the full Sun, and should have very little Water during that Season; in Summer the Plants should be placed abroad in a sheltered Situation, and in warm Weather refreshed with Water

twice a Week, but as the Stalks are very succulent, too much Wet at any Season is very hurtful to them.

All the hardy Sorts of *Crassula*, may be treated as the *Ficoides*, and other hardier Kinds of succulent Plants, with this Difference only, not to give them so much Water, but the 1st, 2d, and 11th Sorts require a warm dry Glass Case in Winter, and must not be so long exposed abroad in Summer, as the other Species, and should have but little Water, especially in Winter.

These Plants are preserved in most curious Gardens for Variety, which consists more in the Appearance of the Plants, than in the Beauty of their Flowers, except the 1st Sort, whose Flowers are of a beautiful Scarlet, and grow in close Bunches at the End of the Branches, so that when several of the Branches are garnished with Flowers at the same Time, they make a fine Appearance, and these Flowers continue in Beauty a long Time; but the Flowers of the other Sorts are small, and most of them are of an herbaceous Colour, so make no Figure.

CRATÆGUS. *Tourn. Inst. R. H. 633. Lin. Gen. Plant. 547.* The Wild Service.

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, cut into 5 concave Segments, which spread open. It hath 5 roundish concave Petals, inserted into the Emplacement, and many Stamina, terminated by roundish Summits, which are also inserted in the Emplacement. The Germen is situated under the Flower, supporting 2 slender Styles, crowned by roundish Stigmas. The Germen becomes an oval, or roundish umbilicated Berry, inclosing two oblong hard Seeds.

The Species are,

1. CRATÆGUS foliis ovatis inequaliter serratis, subtus tomentosis. *Hort. Cliff. 187.* Wild Service with oval Leaves unequally sawed, and woolly on their under Side, commonly called *Aria Theophrasti*, and in some Countries the white Beam, or white Leaf Tree.

2. CRATÆGUS foliis cordatis septangulis, lobis infimis divaricatis. *Lin. Sp. Plant. 476.* Wild Service with Heart-shaped Leaves, having seven Angles, whose lower Lobes spread asunder. This is the *Sorbus Torminalis*. *Cam. Epit. 162.* Wild, or Maple-leaved Service.

3. CRATÆGUS foliis oblongo-ovatis serratis, utrinque virentibus. Wild Service with oblong, oval, sawed Leaves, which are green on both Sides.

4. CRATÆGUS foliis oblongo-ovatis, crenatis, subtus argenteis. Wild Service with oblong, oval, crenated Leaves, which are white on their under Side. This is the *Cratægus Virginiana foliis arbuti*. *Tourn. Inst. R. H. 633. Virginia Cratægus*, or wild Service with an *Arbutus* Leaf.

The 1st Sort grows naturally on the chalky Hills of *Kent, Surry, Suffex*, and other Parts of *England*, and grows to the Height of 30 or 40 Feet, with a large Trunk dividing upward into many Branches; the young Shoots have a brown Bark, covered over with a meally Down; these are garnished with oval Leaves between 2 and 3 Inches long, and one and a Half broad in the Middle, of a light green on their upper Side, but very white on their under; having many prominent transverse Veins, running from the Mid-rib to the Border, where they are unequally sawed, some of the Indentures being much deeper, and the Segments broader than others. The Flowers are produced at the Ends of the Branches in Bunches, their Foot Stalks being meally, as are also the Emplacements.

Empalements of the Flowers, which are cut into 5 obtuse Segments, and reflexed. The Flowers have 5 short Petals, which spread open, and are like those of the Pear Tree, having a great Number of Stamina of the same Length with the Petals, terminated by oval Summits. The Germen, which is situated below the Flowers, becomes an oval Fruit, crowned with the Empalement of the Flower, having one Cell, in which is inclosed 3 or 4 Seeds. It flowers in *May*, and the Fruit ripens in Autumn.

This Tree may be propagated by Seeds, which should be sown soon after they are ripe; for if they are kept out of the Ground till Spring, they remain at least one Year in the Ground, before the Plants appear, so that the Fruit should be buried in the Ground, as is practised with common Haws, Holly Berries, and other hard Seeds which do not come up the same Year; and when the Plants come up, they may be treated in the same Manner as the Haws, but they should by no Means be headed, or cut down; when these Plants are on a poor chalky Soil, they make great Progress, and the Wood is very white and hard, so has been often used for making Cogs for Mills, and many other Purposes where hard tough Timber is wanted.

It may also be propagated by Layers as the Lime Tree and Elm, but these should be laid in the young Wood, and they are two Years before they have sufficient Roots to transplant. I have also raised a few Plants from Cuttings, which were planted in Autumn, in a shady Border, but there was not more than one eighth Part of the Cuttings which succeeded, therefore I would recommend raising them from Seeds, for the Trees so raised grow much larger and straighter than those raised either from Layers, or Cuttings.

The Tree will take by grafting, or budding on Pear Stocks very well, and Pears will take by grafting upon these Trees, so that there is a nearer Affinity between the *Crataegus* and Pear, than there is between either of these and the *Mespilus*; for although both these will sometimes take upon the *Mespilus*, yet neither of them thrive so well, or last so long, when grafted, or budded upon those Stocks, as they do upon each other; therefore *Tournefort*, who has joined the *Crataegus* in his Section, with the Pear and Quince, has come nearer to the natural Division of their Genera, than those who have joined the *Crataegus* to the *Mespilus*.

There is another Species of this Tree, which grows naturally about *Verona*, from whence I have received dried Samples, but they were without Flower and Fruit, and came over by the same Title as the former, for as there is no other growing in that Neighbourhood, so they have supposed it to be the common Sort; but if that is the *Aria* of *Theophrastus*, those Trees which grow in *England* are not, for the Leaves of the Sort from *Verona* are Spear-shaped, above an Inch long, and not so broad by an Inch as those of the *English*, and the Nerves on the under Side are purplish, the Leaves terminating in acute Points, so I make no Doubt of its being a different Species, but as I have not seen the growing Tree, so I would not enumerate it till I had been better informed.

The 2d Sort grows naturally in many Parts of *England*, and is chiefly found on strong Soils; it formerly grew in great Plenty in *Cane Wood*, near *Hamstead*, and

lately there was some young Trees growing in *Bishop Wood*, near the same Place; this rises 40 or 50 Feet high, with a large Trunk, spreading at the Top into many Branches, so as to form a large Head. The young Branches are covered with a purplish Bark, covered with white Spots, and are garnished with Leaves placed alternately, standing on pretty long Foot Stalks; these are cut into many acute Angles, like those of the Maple Tree; they are near 4 Inches long, and 3 broad in the Middle, having several smaller Indentures toward the Top; they are of a bright green on their upper Side, but a little woolly on their under. The Flowers are produced in large Bunches toward the End of the Branches, they are white, and shaped like those of the Pear Tree, but smaller, and stand upon longer Foot Stalks; these appear in *May*, and are succeeded by roundish compressed Fruit, which are shaped like large Haws, and ripen late in Autumn, when they are brown, and if kept till they are soft, in the same Way as Medlars, have an agreeable acid Flavour. The Fruit of this Tree is sold in the *London Markets* in Autumn. The Wood is hard, very white, and useful for many Purposes, but particularly to the Millwrights. It may be propagated as the former Sort, but requires a strong Soil.

The 3d Sort grows naturally on *Mount Baldur*, from whence I received it, and on other mountainous Parts of *Italy*; this rises with a woody Trunk, about 20 Feet high, dividing into many Branches, covered with a purplish spotted Bark, and closely garnished with oblong sawed Leaves, standing alternate on very short Foot Stalks; they are about 3 Inches long, and one and a Half broad, in the broadest Part, lessening toward both Ends; they are slightly sawed on their Edges, and are of a deep green on both Sides. The Flowers are produced at the End of the Branches in small Bunches, which have rarely more than 4 or 5 in each; they are white, and much smaller than those of the former Sorts; these are succeeded by Fruit about the Size of the common Haw, which is of a dark brown Colour when ripe. It flowers in *May*, and the Fruit ripens in Autumn.

This Sort may be propagated as the first, but requires a strong deep Soil, otherwise it will not thrive. It is very hardy in respect to Cold, but at present is very rare in *England*.

The 4th Sort grows naturally in most Parts of *North America*; this seldom rises more than 5 or 6 Feet high, it hath generally many shrubby Stalks rising from the same Root, which put out small Branches on every Side; these are garnished with Leaves placed alternate, standing on very short Foot Stalks; they are about two Inches long, and one broad, ending in a Point, are slightly indented on their Edges, of a deep green on their upper Side, and a little woolly on their under, of a yellowish white Colour; these Leaves in Autumn change to purple some Time before they fall off. The Flowers are produced in small Bunches at the End, and also from the Side of the Branches; they are small, white, and shaped like those of the former Sorts, but the Petals are narrower; these appear in *May*, and are succeeded by small Fruit, shaped like the common Haw, which turn red in Autumn, and when fully ripe are of a dark brown Colour; these frequently ripen here.

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This Sort may be propagated by Seeds, which should be sown in Autumn, as hath been directed for the first Sort; but as these Seeds are frequently brought from America, and do not arrive here till Spring, so they should be sown in Pots, which may be plunged into the Ground in a shady Situation, where they may remain till Autumn, when they should be removed and plunged into an old Tan Bed, under a Frame, where they may be exposed to the open Air in mild Weather, and sheltered from hard Frost. In the Spring following the Plants will come up, which should be gradually inured to the open Air, and the following Summer the Pots may be again plunged into the Ground, to prevent the Earth from drying too fast; and in very dry Weather they should be twice a Week refreshed with Water, and kept clean from Weeds; if these Pots are in Autumn plunged again into an old Bed of Tan in a Frame, it will prevent the Plants being injured by Frost, which, while they are very young, will frequently kill their upper Part, though when they are become more ligneous, they will resist the greatest Cold of our Winters; these Plants should be planted out early in the Spring, before they shoot, into a Nursery Bed, where they may grow a Year or two to get Strength, when they may be transplanted where they are to remain. If these Plants are planted in a moist light Soil, their Roots will extend to a considerable Distance, and put up many Shoots, which may be taken off in the Spring, and thereby may be increased; this will also take if grafted on the Pear, and if the young Branches are laid down, they will take Root, so they may be propagated either Way.

This is generally planted among flowering Shrubs of the same Growth, where it will add to the Variety.

CRATEVA. *Lin. Gen. Plant.* 528. *Tapia Plum. Nov. Gen.* 22. *Tab.* 21. Garlick Pear.

The Characters are,

The Empalement of the Flower is of one Leaf, cut at the Top into 4 oval Segments, which spread open. The Flower hath 4 oval Petals, which are narrow at their Base, and broad at the Top. It hath many bristly Stamina, which are longer than the Petals, terminated by oblong erect Summits. It hath a long incurved Style, upon which sits the oval Germen, crowned by the Stigma sitting close on the Top. The Germen becomes a large fleshy globular Fruit with one Cell, including many Kidney-shaped Seeds.

The Species are,

1. CRATEVA *inermis*. *Flor. Zeyl.* 211. Smooth Crateva, or Garlick Pear. This is the *Tapia arborea trifoliata*. *Plum. Nov. Gen.* 22. Three leaved *Tapia* Tree.

2. CRATEVA *spinosa*. *Flor. Zeyl.* 212. Prickly Crateva. This is the *Cucurbitifera trifolia spinosa medica*, *fructu pulpa Cydonii amula*. *Puk. Alm.* 125. Prickly three leaved Calabash Tree with a Pulp like a Quince.

The first Sort grows naturally in both Indies. I received the Fruit from Jamaica, where it grows in great Plenty. This Tree hath a very large Trunk, which rises to the Height of 30 Feet or upward, covered with a dark green Bark, sending out many Branches, so as to form a large Head. The Branches are garnished with trifoliate Leaves, standing on pretty long Foot Stalks; the middle Leaf, which is much larger than either of the other, is oval, about five Inches long, and two and a Half broad in the Middle. The two Side Leaves are

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oblique, those Sides which join the middle Leaf being much narrower than the other, and turn at both Ends toward the Middle, so that their Mid-rib is not parallel to the Sides; these two end in acute Points. The Leaves are smooth, of a light green on the upper Side, but pale on their under, their Edges are entire. The Flowers are produced at the Ends of the Branches, standing upon long Foot Stalks; these have Empalements of one Leaf, cut into four Segments almost to the Bottom. The Flower hath 4 oblong Petals, which spread open, and are reflexed, having many long slender Stamina, connected at their Base, but spread open above, and terminated by oblong purple Summits; these surround a slender long Style, upon which is situated the oval Germen, which is crowned by an obtuse Stigma. The Germen becomes a round Fruit, about the Size of an Orange, having a round brown Shell, or Cover, inclosing a mealy Pulp, filled with Kidney-shaped Seeds. This Fruit hath a strong Smell of Garlick, which is communicated to the Animals that feed on it.

This is propagated by Seeds, which must be procured from the Countries where the Trees grow naturally; these must be sown on a hot Bed in Spring, and when the Plants come up, they must be treated in the same Manner as hath been directed for the *Anona*, to which Article the Reader is desired to turn for the Culture.

The 2d Sort grows naturally in India to a very large Tree, with a large Trunk, sending out many long Branches garnished with trifoliate Leaves, which are oblong, entire, and end in acute Points; between these the Branches are armed with long sharp Thorns, which come out by Pairs, and spread asunder. The Flowers are produced in small Clusters from the Side of the Branches, 5 or 7 standing on a common branching Foot Stalk; these have 5 acute Petals, which are reflexed, and many Stamina which stand round a single Style of the same Length; the Petals are green on the Outside, and whitish within, and have a grateful Odour. After the Flower is past, the Germen swells to a large Fruit, the Size of an Orange, having a hard Shell, which incloses a fleshy viscous Pulp, of a yellowish Colour, having many oblong plain Seeds within it; the Pulp of this Fruit hath an agreeable Flavour when ripe, so is frequently eaten in India, where they serve up the Fruit, mixed with Sugar and Orange, in their Deserts, and is esteemed a great Delicacy.

This Sort is propagated by Seeds, procured from the Places where it grows naturally; these must be sown on a good hot Bed in Spring, and when the Plants are fit to remove, they should be each transplanted into a small Pot filled with light Kitchen Garden Earth, and plunged into a hot Bed of Tanners Bark, shading them every Day from the Sun, until they have taken fresh Root, after which they may be treated as the *Anona*, but sparingly watered in Winter.

CREPIS. *Lin. Gen. Pl.* 819. *Hieracioides*. *Kaill. Ad. R. Sc.* 1721. *Hieracium*. *Tourn.* Ballard Hawkweed.

The Characters are, It hath a Flower composed of many hermaphrodite Florets, included in a double Empalement; the outer is short, spreading, and falls off, the inner is permanent, oval, and furrowed, having many narrow Scales, contracted together at the Top. The hermaphrodite Florets are of one Leaf; they are uniform.

uniform, Tongue-shaped, and indented at the Top in five Parts; these spread over each other like the Scales of Fish; these have each five short hairy Stamina, terminated by cylindrical Summits. The Germen is situated in the Center of the Floret, supporting a slender Style, crowned by two reflexed Stigmas. The Germen afterward becomes an oblong Seed, crowned with a long feathery Down, which sits upon little Foot Stalks.

The Species are,

1. *CREPIS foliis amplexicaulibus, lanceolatis, omnibus dentatis: Radicalibus sinuatis.* Vir. Cliff. 79. *Crepis* with Spear-shaped Leaves embracing the Stalks, which are all indented, and the lower ones jagged. This is the *Hieracium dentis leonis folio, flore suave rubente.* C. B. P. Hawkweed with a Dandelion Leaf, and soft red Flower.

2. *CREPIS foliis pinnatis angulatis, petiolatis, dentatis.* Prod. Leyd. 126. *Crepis* with angular indented winged Leaves having Foot Stalks. *Hieracium foliis Cicboræ sylvestris villosis, odore Castorei.* Bot. Monsp. Hawkweed with hairy wild Succory Leaves, smelling like Castor.

3. *CREPIS involucri calyce longioribus incurvatis, foliis lanceolatis dentatis.* *Crepis* with an incurved Involucre longer than the Empalement, and Spear-shaped indented Leaves. This is the *Hieracium medio-nigrum.* Bæticum majus. Par. Bat. 185. Greater Spanish Hawkweed with Flowers black in the Middle.

4. *CREPIS foliis amplexicaulibus, oblongis, acuminatis inferioribus supernè, summis infernè, denticulatis.* Hort. Up. *Crepis* with oblong, pointed Leaves embracing the Stalk, the lower being indented upward; and the upper downward. *Hieracium Alpinum Scorzoneræ folio.* Tourn. Alpine Hawkweed with a Viper's Grass Leaf.

There are several other Species of this Genus, some of which grow naturally in England, and others are Weeds in divers Parts of Europe, so are rarely admitted into Gardens, therefore I shall not enumerate them here.

The 1st Sort grows naturally in *Apulia*, but is now cultivated in English Gardens for Ornament; it is an annual, and perishes after it hath ripened Seeds. This hath many Spear-shaped Leaves which spread on the Ground, these are deeply jagged on their Sides; between them arise the branching Stalks, which grow a Foot and Half high, dividing into many Branches, garnished with oblong Leaves deeply indented on their Edges, embracing the Stalks with their Base; the Stalks are each terminated by one large radiated Flower, of a soft, red Colour, composed of many half Florets succeeded by oblong Seeds crowned with a feathery Down. It flowers in June and July and the Seeds ripen in Autumn. This Plant, when bruised, emits an Odour like bitter Almonds.

The Seeds should be sown in Spring on the Borders of the Flower Garden where they are designed to remain, so that if 6 or 8 Seeds are sown in each Patch, when the Plants come up, they may be reduced to 3 or 4; and if these are kept clean from Weeds, they will require no other Culture, except putting small Sticks down to fasten the Stalks, to prevent their being broken by Winds, or loaded by Rain. If the Seeds are sown in Autumn, or permitted to scatter, the Plants will come up, and live through the Winter without Shelter, and these will flower early in Spring.

The 2d Sort grows naturally in the South of France and in Italy. This is a biennial Plant, and sometimes,

when it is in poor Ground, will continue longer; this hath a thick tap Root which strikes deep into the Ground, sending out many small Fibres, the lower Leaves are from 4 to 5 Inches long, and about a Quarter of an Inch broad, having several deep Jags on their Edges, the Segments ending in acute Points; from the same Root arises 4 or 5 Stalks, which grow about 9 or 10 Inches high, the lower Part of these are garnished with Leaves of the same Form with those near the Root, but are smaller, and more jagged, the upper Part of the Stalks are naked, and branch out into two, and sometimes three Branches, each being terminated by one Flower of a Gold Colour, inclining to Copper, composed of many Florets included in a single Empalement; the Flowers are succeeded by oblong narrow Seeds, crowned with a feathery Down: The whole Plant, when bruised, emits a strong Odour of Castor. It flowers in June, and the Seeds ripen in Autumn. This is frequently preserved in Gardens for Variety.

It is propagated by Seeds as the first Sort, but as this continues longer, the Seeds need not be annually sown. The Plants require no other Culture but to keep them clean from Weeds, and if the Seeds are permitted to scatter, the Plants will come up without any Trouble, so need only be thinned where they are too close.

The 3d Sort is an annual Plant, which grows naturally in Spain, but is now frequently propagated in Flower Gardens for Ornament. This puts out Leaves near the Root, which are 9 Inches long, and almost 2 broad in the Middle, these are of a light green, and a little jagged on their Edges; the Stalks rise a Foot and a Half high, dividing into many Branches, garnished with Leaves of the same Form as those at Bottom, but are smaller and sit close to the Branches; the Flowers are produced at the End of the Branches, these have a double Empalement, composed of many long, very narrow Leaves; the out Series are reflexed downward, and turn upward again, and are inflexed at their Extremities. The Flowers are composed of many Florets, which are stretched out on one Side at the Top like a Tongue, these are cut at their Extremities into 4 or 5 Parts; they spread regularly in Form of Rays, and are situated over each other like Scales of Fish; there are two Varieties of this, one with a deep yellow, and the other of a Sulphur Colour inclining to white, but both have a dark black Bottom or Middle, so make a pretty Appearance in a Garden. It flowers in June and July, and the Seeds ripen in Autumn. This Plant requires the same Culture as the first, and is equally hardy, so that where the Seeds are permitted to scatter, the Plants will come up without Care.

The 4th Sort grows naturally on the Alps, this is also an annual Plant, which sends out many oblong pointed Leaves near the Root, which are five Inches long, and almost two broad at their Base, lessening gradually to a Point, the upper Part of these are slightly indented, but their lower Parts are entire; the Stalks are strong, upright, rising a Foot and a Half high, dividing into 3 or 4 Branches, which grow erect, and are terminated by pale, white Flowers, inclosed in a strong hairy Empalement; which contracts close toward the Top, the Stalks are garnished with Leaves of the same Form as the lower, which embrace the Stalks with their Base, where they

they are slightly indented, but their upper Parts are entire; these Leaves are hairy and rough. It flowers in June, and the Seeds ripen in Autumn. This requires the same Culture as the first, and the Seeds will scatter about the Garden, so that if the Plants are not destroyed, they will maintain themselves without any Care.

CRESCENTIA. *Lin. Gen. Plant. 680. Cujete. Plum. Nov. Gen. 23. Tab. 16. Calabash Tree.*

The Characters are,

The Flower hath one Petal, which is irregular, having a curved gibbous Tube, whose Brim is cut into 5 unequal Segments, which are reflexed; this hath an Empalement, which is short, of one Leaf and cut into 2 obtuse Segments, which are concave. It hath 4 Stamina, 2 of which are of the Length of the Petal, the other are shorter, terminated by twin Summits which are prostrate. It hath an oval Germen sitting on a Foot Stalk, supporting a long slender Style, crowned by a roundish Stigma. The Germen afterwards becomes an oval or Bottle shaped Fruit, with a hard Shell inclosing many flat Heart-shaped Seeds.

The Species are,

1. **CRESCENTIA foliis lanceolatis, utrinque attenuatis.** *Hort. Cliff. 327.* *Crescentia* with Spear-shaped Leaves, narrowed at both Ends. This is the *Cujete foliis oblongis angustis magni fructu ovato; Plum. N. G.* Calabash Tree with oblong narrow Leaves, and large oval Fruit.

2. **CRESCENTIA foliis oblongo-ovatis, fructu rotundo, cortice fragili.** *Crescentia* with oblong, oval Leaves, and a round Fruit with a tender Shell.

There are some Varieties of these Trees, which only differ in the Size and Shape of their Fruit, but those are Variations which arise from Seeds of the same Tree, so are not to be enumerated as distinct Species, but the two here mentioned are undoubtedly different Species, for I have frequently raised them from Seeds, and have never found either of them vary.

The 1st Sort grows naturally in *Jamaica* and the *Leeward Islands*. This hath a thick Trunk, covered with a whitish Bark, which rises from 20 to 30 Feet high, having several Knots all the Length, and at the Top divides into many Branches, which spread out every Way, and form a large regular Head; these are garnished with Leaves which come out irregularly, sometimes single, and at others many arise from the same Knot; they are near 6 Inches long, and one and a Half broad in the Middle, diminishing gradually to both Ends; they are of a lucid green, and have very short Foot Stalks, with one Mid-rib, and several transverse Veins running from that to the Sides. The Flowers are produced from the Side of the large Branches, and sometimes from the Trunk, standing on long Foot Stalks, their Empalement is deeply divided into two obtuse Segments. The Flower hath but one Petal, which is irregular, having an incurved Tube, which is divided at the Brim into 2 irregular Segments, which turn backward; these are of a greenish yellow Colour, striped and spotted with brown; the Flowers are an Inch and a Half long, from the Bottom of the Tube to the Extent of the upper Segment. They have 4 slender Stamina, of the same Colour with the Petal, which are of unequal Lengths, two being full as long as the Petal, and the other are much shorter; they are terminated by oblong Summits, divided in the Middle which lie prostrate on the Stamina. From the

lower Part of the Tube arises a long, slender Foot Stalk, supporting the oval Germen, which hath a headed Stigma fitting close on the Top, the Germen afterwards turns to a large Fruit, of different Forms and Size; they are often spherical, sometimes they are oval, and at other Times they have a contracted Neck like a Bottle, and are so large, as when the Pulp and Seeds are cleaned out, the Shells will contain 3 Pints or 2 Quarts of Liquid. These Shells, are covered with a thin Skin of a greenish yellow when ripe, which is peeled off; and under this is a hard ligneous Shell, inclosing a pale yellowish soft Pulp, of a tart unfavoury Flavour, surrounding a great Number of flat Heart-shaped Seeds.

The Shells of this Fruit are cleaned of their Pulp, and the outer Skin taken off by the Inhabitants of the Islands, and when dried, they use them for drinking Cups, some of which are tipped with Silver, and to the Necks they fasten Handles, and some of the long small Fruit are formed into the Shape of Spoons or Ladles; the round ones are cut through the Middle, and used as Cups for Chocolate. The *Indians* put a Number of small Stones into them when cleared of the Pulp, to make a Sort of Rattle: In short, they convert these Shells into many Sorts of Furniture, which is the principal Use made of the Fruit, for the Pulp is seldom eaten, except by Cattle in the Time of great Droughts. The Leaves and Branches are also eaten by the Cattle in Times of Scarcity. The Wood of this Tree is hard and smooth, so is frequently used for making Saddles, Stools and other Furniture.

The 2d Sort seldom rises more than 15 or 20 Feet high; this hath an upright Trunk, covered with a white smooth Bark; sending out many lateral Branches at the Top, garnished with oblong Leaves, 3 Inches in Length, and one and a Quarter broad; these are ranged alternately on the Branches, sitting upon short Foot Stalks, they are of a deeper green than those of the 1st Sort, and their Edges are entire. The Flowers come out from the Side of the large Branches and the Trunk; these are smaller, and of a deeper yellow Colour than those of the first; the Fruit of this is sometimes round, at others oval, some being much larger than the other; the Shells are thin and very brittle, so are unfit for any Purposes to which those of the former are employed; the Seeds are also much thinner, and the Pulp is of a deeper yellow. The Wood is hard, and very white, so might be useful, were it not for the Plenty of other Sorts, which abound in many of the Islands. This was found growing naturally in Plenty at *Campeachy* by Dr. *Houssoun*, who sent the Fruit to *England*.

These Trees are too tender to live abroad in *England*, so require a warm Stove to be preserved here. They are easily propagated by Seeds, which must be procured from the Countries where they grow naturally; the Way is to have the entire Fruit sent over when fully ripe; for when the Seeds are taken out of the Pulp Abroad, and sent over hither, if they are long in their Passage, they will loose their growing Quality before they arrive, as I have often experienced. These Seeds must be sown on a good hot Bed in Spring, and when the Plants are fit to remove, they should be each planted into a small Halfpenny Pot filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, observing

to shade them from the Sun till they have taken fresh Root, when they must be treated as other tender Plants which are Natives of the same Countries. In Winter they must be placed in the Tan Bed of the Bark Stove, and during that Season should have but little Water; in Summer they will require to be gently watered 2 or 3 Times a Week, according to the Warmth of the Season; and in hot Weather, they should have a large Share of Air admitted to them. With this Management they will make great Progress, and their Leaves being of a fine green, the Plants make a pretty Variety in the Stove, but they have not as yet flowered in England.

CRESS the Garden. See Nasturtium.

CRESS the Indian. See Tropæolum.

CRESS the Water, and the Winter. See Sisymbrium.

CRINUM. Lin. Gen. Plant. 366. *Lilio-Asphodelus*. Com. Rar. 14. Dillen. Hort. Elth. 194. Asphodel Lilly.

The Characters are,

The Involucrum is composed of 2 oblong Leaves in Form of a Sheath or Cover, which dries and is reflexed. The Flower hath one Petal, which is Funnel-shaped, having a long Tube, deeply cut at the Top into 6 Parts which are reflexed. It hath 6 long Stamina, inserted in the Tube of the Petal, and stretched out beyond the Petals, spreading open; these are terminated by oblong prostrate Summits, rising at one End; the Germen is situated in the Bottom of the Flower, supporting a long slender Style crowned by a small trifid Stigma. The Germen afterward becomes an oval Capsule with 3 Cells, each containing one or two oval Seeds.

The Species are,

1. CRINUM foliis sublancoatis planis, corollis obtusis. Lin. Sp. Pl. 292. Crinum with plain Spear-shaped Leaves, and obtuse Petals. This is the *Hyacinthus Africanus tuberosus*, flore caruleo umbellato. Hort. Amst. African tuberosus Hyacinth with a blue umbellated Flower.

2. CRINUM foliis carinatis. Flor. Zeyl. 127. Crinum with Keel-shaped Leaves. This is the *Lilium Zeylanicum, bulbiferum & umbelliferum*, H. L. 682. Ceylon Lilly with umbellated Flowers, bearing Bulbs.

3. CRINUM corollarum apicibus introrsum unguiculatis. Lin. Sp. Pl. 292. Crinum with the Tops of the Petals formed on the Inside like the Nails of a Finger. This is the *Lilio-asphodelus Americanus sempervirens, maximus, polyanthus, albus*. Com. rar. Pl. Largest ever-green American Asphodel Lilly having many white Flowers.

4. CRINUM foliis carinatis, basi angustioribus, floribus profunde dissectis. Crinum with Keel-shaped Leaves narrower at their Base, and Flowers deeply cut.

The 1st Sort grows naturally at the Cape of Good Hope, from whence it was brought to the Gardens in Holland, and since been spread into most of the curious Gardens in Europe. The Root is composed of many thick fleshy Fibres diverging from the same Head, which strike deep into the Ground, and put out many smaller Fibres, which are white and fleshy; from the same Head arises a Cluster of Leaves surrounding each other with their Base, so as to form a Kind of herbaceous Stalk, about 3 Inches high, from which the Leaves spread only two ways, appearing flat the other two. The Flower Stalk arises by the Side of these Leaves, which is round, hollow, and rises upward of 2 Feet high, being terminated by a large Head of Flowers, included in a Kind of Sheath, which splits into two Parts, and is re-

flexed. The Flowers stand each upon a Foot Stalk about one Inch long; the Flowers are tubulous, have but one Petal, which is cut, almost to the Bottom, into six oblong, blunt Segments, waved on their Edges; in the Center is an oval 3 cornered Germen, supporting a long Style, attended by 6 Stamina, 2 of the same Length, 2 somewhat shorter, and the 2 which rest upon the lower Segments are the shortest. The Flowers are of a bright blue Colour, and grow in large Bunches, so make a fine Appearance. They begin to flower in September, and frequently continue in Beauty till March, which renders them more valuable.

This Plant is propagated by Offsets which come out from the Side of the Plants, these may be taken off the latter End of June, at which Time these Plants are in their greatest State of rest; when the Plants should be turned out of the Pots, and the Earth carefully cleared away from the Roots, that the Fibres of the Offsets may be better distinguished; then the Fibres of the Offsets should be separated from those of the old Roots, and the Offsets may with the Hands be separated, being careful not to break their Heads. But where they adhere so closely to the old Plant, as not to be so separated, they must be cut off with a Knife, taking great Care not to wound or break the Roots of either the Offsets or the Parent Plant. When these are parted, they should be planted, each into a separate Pot, filled with light Kitchen Garden Earth, and placed in a shady Situation, where they may enjoy the Morning Sun, giving them a little Water twice a Week, if the Weather proves dry, but they must not have too much Wet at this Season, when they are almost inactive, for as the Roots are fleshy and succulent, they are apt to rot with great Moisture. In about five Weeks the Offsets will have put out new Roots, when the Pots may be removed to a more sunny Situation, and then they may have a little more Water which will strengthen their flowering; but it must not be given too liberally for the Reasons before given. In September they will put out their Flower Stalks, and toward the End of that Month, the Flowers will begin to open, when, if the Weather should not be good, they should be removed under Shelter, to prevent the Flowers from being injured by Frost or too much Wet; but they should have as much free Air as possible, otherwise the Flowers will be pale coloured and weak. Toward the End of October, they should be removed into the Green-house, and placed where they may enjoy as much free Air as possible, and not be over-hung by other Plants; and during the Winter, they may have a little Water once a Week or oftener in mild Weather, but in Frost they should be kept dry. This Plant only requires Protection from Frost and Moisture, so should not have any artificial Warmth in Winter, and must be placed in the open Air in Summer.

The 2d Sort hath large bulbous Roots, which send out many large fleshy Fibres which have Bulbs formed at their Ends, the Leaves are near 3 Feet long, hollow on their upper Side, and closely fold over each other at their Base, spreading out on every Side, and the outer Leaves generally turn downward at the Top; they are of a deep green and are obtuse at their Points. The

Flower

Flower Stalk arises on one Side the Leaves, which is thick, succulent, hollow in the Middle, and a little compressed on two Sides, this grows two Feet high or more, and is of the same Colour with the Leaves; these are terminated by large Umbels of Flowers, which hath a Sort of Sheath or Cover, with splits Length-ways, and is reflexed back to the Stalk, where it dries and remains; the Flowers have Tubes near 4 Inches long, which are narrow, and the upper Part deeply cut into 6 long Segments reflexed back almost to the Tube; in the Center arises the Style, attended by 6 long Stamina, which stand out beyond the Petal, and are terminated by oblong prostrate Summits of a yellow Colour. After the Flowers are past, the Germen at the Bottom of the Tube, becomes a large roundish 3 cornered Capsule, having 3 Cells, 2 of which are generally abortive, and the 3d hath 1 or 2 irregular Bulbs, which if planted produce young Plants.

The 3d Sort hath broader Leaves than the 2d, they are plain and not hollowed on their upper Side, but shorter and of a lighter green; these embrace each other at their Base; by the Side of these arises the Flower Stalk, which is compressed and hollow rising about 2 Feet high, and terminated by large Umbels of white Flowers, like those of the former Sort, but the Segments of the Petal are broader and not so much reflexed.

The 4th Sort hath Roots like those of the 2d; the Leaves are narrower at their Base, and stained with purple on their under Side; the Flower Stalks are purple, and grow to the same Height as those of the 2d; the Flowers are in Shape like them, but the Tube is purple, and the Segments have a purple Stripe running through them; the Stamina also are purple, which renders this more beautiful than the other Sorts; these Differences are constant in all the Plants which rise from Seeds, so there can be no Doubt of its being a distinct Sort.

These 3 Sorts grow naturally in both Indies, so are very tender, and must be kept in a warm Stove, otherwise they will not thrive in England; they are easily propagated by Offsets, which the Roots put out in Plenty, or by the Bulbs which succeed the Flowers, and ripen perfectly here. These must be planted in Pots filled with rich Earth, and plunged into the Tan Bed in the Stove, the Plants will make greater Progress and flower oftener, than when they are placed on Shelves; though in the latter way they will succeed very well, if kept in a good Temperature of Heat. The Roots should be transplanted in Spring, and all the Offsets taken off, otherwise they will fill the Pots and starve the old Plants: They must be frequently refreshed with Water, but it must not be given too plentifully, especially in Winter. These Sorts flower at every Season of the Year, which renders them very valuable, for where there are many Plants, there will be almost a perpetual Succession of Flowers, which emit a very agreeable Odour.

CRITHMUM. *Lin. Gen. Plant.* 303. *Tourn. Inst. R. H.* 317. *Tab.* 169. Samphire. In *French Racile*.

The Characters are,

It is a Plant with an umbelliferous Flower, the great Umbel is hemispherical and composed of many smaller of the same Figure; the Involucrum of the general Umbel is composed of several Spear-shaped Leaves; those of the particular Umbels have very narrow Leaves the Length of the Umbel; the general Umbel is uniform, the Flowers have 5

oval inflexed Petals almost equal; they have 5 Stamina the Length of the Petals, terminated by roundish Summits. The Germen is situated under the Flower, supporting 2 reflexed Styles crowned by obtuse Stigmas; the Germen becomes an oval compressed Fruit, dividing into 2 Parts, each having one compressed, elliptical, furrowed Seed.

The Species are,

1. CRITHMUM *sive Faniculum maritimum minus.* C. B. P. 288. Samphire, or smaller Sea Fennel.

2. CRITHMUM *foliolis lateralibus bis trifidis.* Hort. Cliff. 98. Samphire whose smaller Leaves on their Sides are doubly trifid. This is the *Apium Pyrenaicum thapsice facie.* *Tourn. Inst.* 305. Pyrenean Parsley with the Appearance of scorching Carrot.

The 1st Sort grows on the Rocks by the Sea Side, in many Parts of England. This hath a Root composed of many strong Fibres, which penetrate deep into the Crevices of the Rocks, sending up several fleshy succulent Stalks, which rise about 2 Feet high, these are garnished with winged Leaves, which are composed of 3 or 5 Divisions, each of which hath 3 or 5 small thick succulent Leaves near half an Inch long; the Foot Stalks of the Leaves embrace the Stalks at their Base. The Flowers are produced in circular Umbels at the Top of the Stalks, these are of a yellow Colour, and are composed of 5 Petals, which are near equal in Size, and somewhat like those of Fennel, but are larger. This Herb is pickled and esteemed very comfortable to the Stomach, and is very agreeable to the Palate, it provokes Urine gently, removes the Obstructions of the Viscera, and creates an Appetite, it is commonly used for Sauce; it is gathered on the Rocks where it grows naturally, but the People who supply the Markets with it, seldom bring the right Herb, but instead of it they bring a Species of *Aster*, which is called golden Samphire, but hath a very different Flavour from the true, nor has it any of its Virtues. This grows in greater Plenty and on the plain Ground overflowed by Salt Water, whereas the true Samphire grows out of the Crevices of perpendicular Rocks, where it is very difficult to come at; it flowers in July, and the Seeds ripen in Autumn.

This Plant is with Difficulty preserved in Gardens, nor will it grow so vigorous as it does on Rocks, but if planted on a moist gravelly Soil, it will thrive tolerably well, and may be preserved some Years; it may be propagated by Seeds or parting the Roots.

The 2d Sort is by *Tournefort* ranged in his Genus of *Apium*. This grows naturally on the Pyrenean Mountains; it is a biennial Plant, which doth not flower till the 2d Year, and perishes soon after the Seeds are ripe. There are 2 or 3 Sorts of this Plant, which differ in their outer Appearance, but I am not certain of their being distinct Species; one of these is titled by Mr. Ray, *Apium montanum sive petracum album*. This is of humbler Growth than the other; the small Leaves are broader, not so much cut on their Edges, and of a paler green: They are preserved in a few Gardens for Variety. They are propagated by Seeds, which should be sown where they are designed to remain, and require no Culture but to keep them clean from Weeds, and thin them where too close.

CRISTA GALLI. See *Pedicularis*.

CRISTA PAVONIS. See *Poinciana*.

CROCUS. *Lin. Gen. Plant.* 53. *Tourn. Inst. R. H.* 350. *Tab.* 183. 184. Saffron.

The Characters are,

It hath a Spatha or Sheath of one Leaf; the Flower hath one Petal which is deeply cut into six oblong Segments which are equal; it hath 3 Stamina, which are shorter than the Petal terminated by Arrow-pointed Summits. The roundish Germen is situated at the Bottom of the Tube, supporting a slender Style, crowned by 3 twisted Stigmas which are sawed, the Germen afterward becomes a roundish Fruit with 3 Cells, filled with roundish Seeds.

The Species are,

1. CROCUS *Spatha univalvi radicali, corollæ tubo longissimo. Lin. Sp. Pl.* 36. Saffron with a Spatha near the Root having one Valve, and a long Tube to the Flower. *Crocus sativus. C. B. P.* Cultivated Saffron.

2. CROCUS *Spatha univalvi pedunculato, corollæ tubo brevissimo. Saffron* with a Spatha on the Foot Stalk having one Valve, and a very short Tube to the Flower. This is the *Crocus juncifolius autumnalis, flore magno purpureo. Boerb. Ind. alt.* 2. 120. Rush leaved autumnal Crocus with a large purplish Flower.

3. CROCUS *Spatha bivalvi radicali, floribus sessilibus. Crocus* with a bivalve Spatha near the Root, and Flowers sitting close to the Ground. This is the *Crocus vernus lasifolius, flavo flore varius. C. B. P.* 66. Broad leaved Spring Crocus with a variable yellow Flower, commonly called Bishop's Crocus.

4. CROCUS *Spatha biflora corollæ tubo tenuissimo. Crocus* with two Flowers in each Spatha, having very narrow Tubes. This is the *Crocus vernus, striatus, vulgaris. Par. Par.* Common, Spring, striped Crocus.

There are great Varieties of these Flowers; but as most, if not all of them are only seminal Variations, I thought it needless to particularise them here, especially as there are frequently new Varieties obtained from Seeds. Those here enumerated, must be allowed to be specifically different, since they have many distinguishing Characters, sufficient to determine the specifick Difference in Plants.

The 1st Sort is the Plant which produces the Saffron, a well known Drug. This hath a round bulbous Root, as large as a small Nutmeg, a little compressed at the Bottom, and covered with a coarse, brown netted Skin; from the Bottom of this Bulb, is sent out many long Fibres, which strike pretty deep into the Ground; from the upper Part of the Root come out the Flowers, which together with the young Leaves whose Tops just appear, are closely wrapped about by a thin Spatha or Sheath, which part within the Ground, and opens on one Side. The Tube of the Flower is very long, arising immediately from the Bulb, without any Foot Stalk, and at the Top is divided into six oval, obtuse Segments which are equal, and of a purple blue Colour. In the Bottom of the Tube is situated a roundish Germen supporting a slender Style, not more than half the Length of the Petal, crowned with 3 oblong golden Stigmas (which is the Saffron) these spread asunder each Way: The Style is attended by 3 Stamina, whose Base are inserted in the Tube of the Petal, and rise to the Height of the Style, where they are terminated by Arrow-pointed Summits. This Plant flowers in October, and

the Leaves grow all the Winter, but it never produces any Seeds here.

The 2d Sort grows naturally on the Alps and Helvetian Mountains, this hath a smaller bulbous Root than the 1st, and is more compressed, the Flowers appear about the same Season, but they rise with a short Foot Stalk, having a short Spatha or Sheath just below the Flower, which covers it before it expands. The Tube of the Flower is very short, the Petal being divided almost to the Bottom; and the Segments terminate in acute Points; the Stamina and Style are short, and the Leaves of the Plant are very narrow. The Flower is of a deep blue; but there is a Variety of this with a Sky blue Flower; which is supposed to have been produced by Seeds.

The 3d Sort hath a pretty large compressed bulbous Root, covered with a light brown netted Skin, from which arise 4 or 5 Leaves, like those of the other Vernal Crocuses, of a purplish dark Colour on their lower Parts; from between these come out one or two Flowers of a deep yellow Colour, sitting close between the young Leaves, never rising above 2 Inches high, these have an agreeable Odour; the outer Segments of the Petal are marked with 3 black Streaks or Stripes running lengthways from the Bottom to the Top of the Segment; these are narrower than the inner Segments. From the double Arrangement of these Segments, some have called it a double Flower. These Segments have dark purple Bottoms, and the Tube of the Flower hath as many purple Stripes as there are Segments in the Petal. Out of the Center of the Tube arises a slender Style, crowned by a golden Stigma, which is broad and flat, and is attended by 3 slender Stamina of the same Length, terminated by yellow Summits; after the Flower is past, the Germen pushes out of the Ground, and swells to a roundish 3 cornered Seed Vessel, which opens in 3 Parts filled with roundish brown Seeds. This is one of the earliest Spring Crocuses.

The 4th Sort rises with a few very narrow Leaves, which are, together with the Flower Buds, closely wrapped round by a Spatha or Sheath, out of which arise 2 Flowers, one of which hath a longer Tube than the other, but these are very slender, and do not rise much above the Spatha; there the Petal enlarges, and is divided into 6 obtuse Segments, of equal Size, they are of a dirty white on their Outside with 3 or 4 purple Stripes in each, the Inside of the Petal is of a purer white; the Stamina and Style are nearly the same as those of the former Sort. This is one of the earliest Sorts.

The Varieties of the autumnal Crocus are,

1. The sweet smelling autumnal Crocus, whose Flowers come before the Leaves. *C. B.* This is our 2d Sort.

2. The autumnal Mountain Crocus. *C. B.* This hath a paler blue Flower.

3. The many flowering bluish autumnal Crocus. *C. B.* This hath many Sky blue Flowers.

4. The small flowering autumnal Crocus. *C. B.* This hath a small deep blue Flower.

The Varieties of the Spring Crocus are,

1. Broad leaved purple variegated Spring Crocus. *C. B.* This hath broad Leaves and a deep blue Flower striped.

2. Broad

2. Broad leaved Crocus of the Spring with a purple Flower. *C. B.* This hath a plain purple Flower.
3. Broad leaved Spring Crocus with a violet coloured Flower. *C. B.* This hath a large deep blue Flower.
4. Spring Crocus, with a white Flower and a purple Bottom. *C. B.*
5. Broad leaved white variegated Spring Crocus.
6. Broad leaved Spring Crocus with many purple violet Flowers striped with white. *C. B.*
7. Broad leaved Spring Crocus of an Ash-colour.
8. Broad leaved Spring Crocus with a large yellow Flower. *C. B.*
9. Broad leaved Spring Crocus with a smaller and paler yellow Flower. *C. B.*
10. Broad leaved Spring Crocus with smaller yellow Flowers striped with black.
11. Narrow leaved Spring Crocus with a smaller Brimstone coloured Flower.
12. Narrow leaved Spring Crocus with a small white Flower.

These are the principal Varieties which I have observed in the *English* Gardens, but there are many more mentioned in the foreign Catalogues, many of which are so nearly alike, as scarce to be distinguished; and if the Seeds were sown, there might be a greater Variety obtained; but as they propagate very fast by Offsets, the Seeds rarely are sown here.

All these several Varieties of Crocuses are very hardy, and will increase exceedingly by their Roots, especially if they are suffered to remain 2 or 3 Years unremoved; they will grow in almost any Soil or Situation, and are very great Ornaments to a Garden early in the Spring, before many other Flowers appear. They are commonly planted near the Edges of Borders on the Sides of Walks; in doing which, you should be careful to plant such Sorts in the same Line as flower at the same Time, and are of equal Growth, otherwise the Lines will seem imperfect. These Roots, losing their Fibres with their Leaves, may then be taken up, and kept dry until the Beginning of *September*, observing to keep them from Vermin; for the Mice are very fond of them. When you plant these Roots (after having drawn a Line upon the Border,) make Holes with a Dibble about 2 Inches deep or more, according to the Lightness of the Soil, and two Inches Distance from each other, in which you must place the Roots with the Bud uppermost; then with a Rake fill up the Holes that the upper Part of the Root may be covered an Inch or more, being careful not to leave any of the Holes open; for this will entice the Mice to them, which, when once they have found out, will destroy all your Roots, if they are not prevented.

These Flowers are commonly disposed this Way in Gardens; but the better Way is to plant 6 or 8 near each other in Clumps, between small Shrubs or on the Borders of the Flower Garden; where if the Varieties are planted in different Patches, and properly intermixed, they will make a much better Appearance than when disposed in the old Method of strait Edgings.

In *January*, if the Weather is mild, the Bud will show above Ground; and in *February* their Flowers appear, before the green Leaves are grown to any Length, so that the Flower seems at first to be naked; but soon after the Flowers decay, the green Leaves grow 6 or 8

Inches long, which should not be cut off until they decay, notwithstanding they appear a little unsightly; for by cutting off the Leaves, the Root will be so weakened as not to arrive at half their usual Bigness, nor will their Flowers the succeeding Year be half so big: Their Seeds are commonly ripe about the Beginning of *May*, when the green Leaves begin to decay.

The Autumnal Crocuses are not so great Increasers as are those of the Spring, nor do they produce Seeds in our Climate, so are less common in Gardens, except the true Saffron, which is propagated for Use in great Plenty in many Parts of *England*; these may be taken up every third Year, as directed for the Spring Crocuses, but should not be kept out of the Ground longer than the Beginning of *August*; for they commonly produce their Flowers in *September*, or the Beginning of *October*; so that if they remain too long out of the Ground, they will not produce their Flowers so strong, nor in such Plenty, as when they are planted early.

The Method of cultivating Saffron being somewhat curious, I shall here insert an Abstract of it, as presented to the Royal Society by Dr. *James Douglas*.

As Saffron grows at present most plentifully in *Cambridgeshire*, and has grown formerly in several other Counties of *England*, the Method of Culture does not, I believe, vary much in any of them; and therefore I judge it sufficient to set down here the Observations which I employed proper Persons, in different Seasons, to make, in the Years 1723, 1724, 1725, and 1728, up and down all that large Tract of Ground that lies between *Saffron-Walden* and *Cambridge*, in a Circle about ten Miles Diameter.

In that County Saffron has been cultivated; and therefore it may reasonably be expected, that the Inhabitants thereof are more thoroughly acquainted with it than they are any where else.

I shall begin with the Choice and Preparation of the Ground; the greatest Part of the Tract already mentioned is an open level Country, with few Inclosures; and the Custom there is, as in most other Places, to crop two Years, and let the Land be fallow the third. Saffron is always planted upon fallow Ground; and, all other Things being alike, they prefer that which has borne Barley the Year before.

The Saffron Grounds are seldom above three Acres, or less than one; and in choosing, the principal Thing they have regard to, is, that they be well exposed, the Soil not poor, nor a very stiff Clay, but a temperate dry Mould, such as commonly lies upon Chalk, and is of an Hazel Colour; though if every Thing else answers, the Colour of the Mould is not material.

The Ground being made Choice of, about *Lady-Day*, or the Beginning of *April*, it must be carefully ploughed, the Furrows being drawn much closer together, and deeper, if the Soil will allow it, than is done for any Kind of Corn; and accordingly, the Charge is greater.

About five Weeks after, during any Time in the Month of *May*, they lay between 20 and 30 Loads of Dung on each Acre; and having spread it with great Care, they plough it in as before; the shortest rotten Dung is the best; and the Farmers, who have the Convenience of making it, spare no Pains to make it good, being sure of a proportionable Price for it. About Mid-

summer

summer they plough a third Time, and between every 16 Feet and an Half, or Pole in Breadth, they leave a broad Furrow or Trench, which serves both as a Boundary to the several Parcels, when there are several Proprietors to one Inclosure, and to throw the Weeds in at the proper Season.

To this Head belongs the Fencing the Grounds, because most commonly, though not always, that is done before they plant. The Fences consist of what they call dead Hedges, or Hurdles, to keep out not only Cattle of all Sorts, but especially Hares, which would otherwise feed on the Saffron Leaves during the Winter.

About the Weather we need only observe, that the hottest Summers are certainly the best, and if there be gentle Showers from Time to Time, they can hardly miss of a plentiful rich Crop, if the extreme Cold, Snow, or Rain of the foregoing Winter have not prejudiced the Heads.

The next Part of the Culture of Saffron is, planting, or setting the Roots; the only Instrument used for which is a narrow Spade, commonly termed a Spit Shovel.

The Time of Planting is commonly in the Month of July, a little sooner or later, according as the Weather answers. The Method is this; one Man with his Spit Shovel raises between 3 and 4 Inches of Earth, and throws it before him about 6 or more Inches; two Persons, generally Women, following with Heads, place them in the farthest Edge of the Trench he makes, at 3 Inches Distance from each other, or thereabouts; as soon as the Digger, or Spitter, has gone once the Breadth of the Ridge, he begins again at the other Side, and digging, as before, covers the Roots last set, and makes the same Room for the Setters to place a new Row, at the same Distance from the first, that they are from one another; thus they go on, till a whole Ridge, containing commonly one Rod, is planted, and the only Nicety in digging is, to leave some Part of the first *Stratum* of Earth untouched, to lie under the Roots; and, in setting, to place the Roots directly on their Bottom.

What Sort of Roots are to be preferred, shall be shewn under the 4th Head; but it must be observed in this Place, that formerly, when Roots were very dear, they did not plant them so thick as they do now; and that they have always some Regard to the Size of the Roots, placing the largest at a greater Distance than the small ones.

The Quantity of Roots planted in an Acre, is generally 16 Quarters, or 128 Bushels, which, according to the Distances left between them, as before assigned, and supposing all to be an Inch in Diameter one with another, ought to amount to 392,040 in Number.

From the Time the Roots are planted, till about the Beginning of September, or sometimes later, there is no more Labour about them; but as they then begin to spire, and are ready to shew themselves above Ground (which is known by digging a few out of the Earth), the Ground must be carefully pared with a sharp Hoe, and the Weeds, &c. raked into the Furrows, otherwise they would hinder the Growth of the Plants.

In some Time appear the Saffron Flowers; and this leads us to the 3d Branch of our present Method. The Flowers are gathered as well before as after they are full blown; and the most proper Time for this is early in

the Morning. The Owners of the Saffron get together a sufficient Number of Hands, who place themselves in different Parts of the Field, pull off the whole Flowers, and throw them Handful by Handful into a Basket, and so continue till all the Flowers are gathered, which happens commonly about Ten or Eleven o'Clock.

Having then carried Home all they have got, they immediately spread them upon a large Table, and fall to picking out the *Filamenta Styli*, or Chives, and together with them a pretty long Proportion of the *Stylus* itself, or String to which they are joined; the rest of the Flower they throw away as useless. The next Morning they return into the Field again, whether it be wet or dry Weather, and so on daily, even on *Sundays*, till the whole Crop be gathered.

The Chives being all picked out of the Flowers, the next Labour about them is to dry them on the Kiln. The Kiln is built upon a thick Plank (that it may be moved from Place to Place) supported by four short Legs; the Outside consists of 8 Pieces of Wood about 3 Inches thick, in form of a quadrangular Frame, about 12 Inches square at the Bottom on the Inside, and 22 Inches at Top; which is likewise equal to the perpendicular Height of it. On the Fore-side is left a Hole about 8 Inches square, and 4 Inches above the Plank, through which the Fire is put in; over all the rest Laths are laid pretty thick, close to one another, and nailed to the Frame already mentioned, and then are plastered over on both Sides, as are also the Planks at Bottom very thick, to serve for an Hearth. Over the Mouth, or widest Part, goes an Hair Cloth, fixed to the Sides of the Kiln, and likewise to two Rollers, or moveable Pieces of Wood, which are turned by Wedges, or Screws, in order to stretch the Cloth. Instead of the Hair Cloth, many People now use a Net Work, or Iron Wire, with which it is observed that the Saffron dries sooner, and with a less Quantity of Fuel; but the Difficulty in preserving the Saffron from burning, makes the Hair Cloth be preferred by the nicest Judges in drying.

The Kiln is placed in a light Part of the House, and they begin by laying five or six Sheets of white Paper on the Hair Cloth, upon which they spread the wet Saffron between 2 and 3 Inches thick; this they cover with other Sheets of Paper, and over these lay a coarse Blanket five or six Times doubled, or, instead thereof, a Canvas Pillow filled with Straw, and after the Fire has been lighted for some Time, the whole is covered with a Board, having a large Weight upon it.

At first they give it a pretty strong Heat, to make the Chives sweat (as their Expression is); and in this, if they do not use a great deal of Care, they are in Danger of scorching, and so of spoiling all that is on the Kiln.

When it has been thus dried about an Hour, they take off the Board, Blanket, and upper Papers, and take the Saffron off from that which lies next it, raising, at the same Time, the Edges of the Cake with a Knife; then laying on the Paper again, they slide in another Board between the Hair Cloth and upper Papers, and turn both Papers and Saffron upside-down, afterwards covering them as above.

This same Heat is continued an Hour longer; then they look on the Cake again, free it from the Papers, and turn it; then they cover it, and lay on the Weight as before.

before. If nothing happens amiss during these first two Hours, they reckon the Danger over; for they have nothing more to do, but to keep a gentle Fire, and turn their Cakes every half Hour, till thoroughly dry, for the doing of which as it ought, full twenty-four Hours are required.

In drying the larger plump Chives they use nothing more, but towards the latter End of the Crop, when these come to be smaller, they sprinkle the Cake with a little small Beer, to make it sweat as it ought; and they begin now to think, that using two Linen Cloths next the Cake, instead of the two innermost Papers, may be of some Advantage in drying, but this Practice is followed as yet but by few.

Their Fire may be made of any Kind of Fuel, but that which smokes the least is best, and Charcoal, for that Reason, is preferred to any other.

What Quantity of Saffron a first Crop will produce, is very uncertain; sometimes 5 or 6 Pounds of wet Chives are got from one Rood; sometimes not above one or two, and sometimes not enough to make it worth while to gather and dry it; but this is always to be observed, that about 5 Pounds of wet Saffron go to make one Pound of dry, for the first 3 Weeks of the Crop, and 6 Pounds during the last Week; and now the Heads are planted very thick, 2 Pounds of dried Saffron may, at a Medium, be allowed to an Acre for the first Crop, and 24 Pounds for the two remaining; the third being considerably larger than the second.

In order to obtain these, there is only a Repetition to be made every Year of the Labour of hoeing, gathering, picking, and drying, in the same Manner as before set down, without the Addition of any Thing new, except that they let Cattle into the Fields, after the Leaves are decayed, to feed upon the Weeds; or, perhaps, mow them for the same Use.

About the *Midsummer* after the third Crop is gathered, the Roots must be all taken up and transplanted; the Management requisite for which, is the 4th Thing to be treated of. To take up the Saffron Heads, or break up the Ground (as the Term is), they sometimes plough it, sometimes use a forked Kind of Hoe, called a Pattock, and then the Ground is harrowed once or twice over; during all which Time of ploughing, or digging, and harrowing, 15 or more will find Work enough to follow and gather the Heads as they are turned up.

They are next to be carried to the House in Sacks, and there cleaned and raised; this Labour consists in cleaning the Roots thoroughly from Earth, and from the Remains of old Roots, old *Involucra*, and Excrescences, and thus they become fit to be planted in new Ground immediately, or to be kept for some Time, without Danger of spoiling.

The Quantity of Roots taken up, in Proportion to those which were planted, is uncertain; but at a Medium, it may be said, that allowing for all the Accidents which happened to them in the Ground, and in breaking up from each Acre, may be had twenty-four Quarters of clean Roots, all fit to be planted.

The Owners are sure to choose for their own Use the largest, plumpest, and fairest Roots; but do least of all approve the longest pointed ones, which they call Spic-

kets, or Spickards, for very small, round, or flat Roots, are sometimes observed to flower.

This is the whole Culture of Saffron in the Country above-mentioned, and we have only now to consider the Charges and Profits which may be supposed, one Year with another, to attend that Branch of Agriculture; and of these I have drawn up the following Computation for one Acre of Ground, according to the Price of Labour in this Country.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent for three Years — — —	3	00	00
Ploughing for three Years — — —	0	18	00
Dunging — — — — —	3	12	00
Hedging — — — — —	1	16	00
Spitting and setting the Heads — — —	1	12	00
Weeding or paring the Ground — — —	1	04	00
Gathering and picking the Flowers — — —	6	10	00
Drying the Flowers — — — — —	1	06	00
Instruments of Labour for three Years, } with the Kiln, about — — — — —	0	10	00
Ploughing the Ground once, and har- } rowing twice — — — — —	0	12	00
Gathering the Saffron Heads — — — — —	1	00	00
Raising the Heads — — — — —	1	12	00
Total Charge	23	12	00

This Calculation is made upon Supposition, that an Acre of Ground yields 26 Pounds of nett Saffron in three Years; which I stated only as a mean Quantity between the greatest and the least; and therefore the Price of Saffron must be judged accordingly, which I think cannot be done better than by fixing it at 30 Shillings per Pound; since in very plentiful Years it is sold at 20, and is sometimes worth between three and four Pounds; at this Rate 26 Pounds of Saffron are worth 39 Pounds, and the nett Profits of an Acre of Ground producing Saffron, will, in three Years, amount to 15 Pounds, 13 Shillings, or about 5 Pounds, 4 Shillings yearly.

This, I say, may be reckoned the nett Profit of an Acre of Saffron, supposing that all the Labour were to be hired for ready Money; but as the Planter and Family do a considerable Part of the Work themselves, some of this Expence is saved; that is, by planting Saffron, he may not only reasonably expect to clear about 5 Pounds yearly per Acre, but also to maintain himself and Family for some Part of each Year; and it is upon this Supposition only, that the Result of other Computations can be said to have any tolerable Degree of Exactness, but the Calculations themselves are undoubtedly very inaccurate.

I have said nothing here concerning the Charge in buying, or Profits in selling, the Saffron Heads, because, in many large Tracts of Ground, these must at length ballance one another, while the Quantity of Ground planted yearly continues the same; which has been pretty much the Case for several Years past.

Dr. Patrick Blair, designing to treat concerning the Crocus, in his sixth Decad of his *Pharmaco-Botanologia*, in the Year 1725, sent to me the following Queries:

1. After what Manner the Species are propagated?
2. Whether the Tap Root springs first, or the Bulb?

3. At what Season the Leaves spring forth?

To these Queries I sent him the following Answer:

1. As to the Propagation of the Species.

This is only by the Roots or Offsets, which the old Roots produce in great Plenty, for I never saw any Thing like a Seed, or a Seed Vessel produced, though I have let stand great Quantities of Flowers, purposely to try.

2. As to the Query, Whether the Tap Root springs first, and the Bulb be afterwards formed?

As soon as the Roots begin to shoot upwards, there are commonly two or three large Tap Roots sent forth from the Side of the old Root, which will run downright two Inches and a Half, or more, into the Ground; at the Place where these Bulbs first come out from the old one, will be formed a Bulb sometimes (though not always, as you will hear presently); and this Tap Root decays. The Bulb will increase in its Bigness, till at last it quite falls off, and is then left entire; which commonly happens in April, when the Green begins to decay; but many Times these tap or carrotty Roots never produce any Bulbs, but always retain the same Figure, and for ever after, I believe are barren; for I planted a Parcel of these carrotty Roots four Years ago in a little Bed, where they have ever since remained, but have not produced one single Flower, notwithstanding they have produced a numerous Offspring of the same carrotty Roots.

And the People about *Saffron Walden* are well apprised of this Barrenness, and therefore throw away all such Roots when they make a new Plantation; but as this Change of the Root is not peculiar to the Saffron only, permit me to digress a little, to give you some Account of this Matter.

In the Parish of *Fulham*, near *London*, the Gardeners used to drive a great Trade in the Jonquil, or *Narcissus juncifolius*, *flore multiplici*, at which Place the greatest Quantity of those Roots was raised for Sale, as perhaps was in any Part of *England*, and turned to as great Account for the Master, as any Crop they could employ their Ground in, till of late Years, that most of their Roots have turned carrotty, and so proved barren, or have produced only single Flowers; so that the Gardeners being hereby disheartened, have thrown them out entirely, neglecting to cultivate them, satisfying themselves with this Reason, That their Ground was tired with them.

But to return to the Crocus; besides those Roots already mentioned, there will be three or four small Bulbs formed upon the upper Part of the Root, and some underneath; which from the first Appearance assume the round Shape of its Parent Root, and have no Tap Root belonging to them; those on the upper Part of the Root rarely emit so much as a Fibre, but receive their Nourishment immediately from the old Root; but those on the under Side send out many Fibres all around, by which they draw their Nourishment from the Ground; these being parted from the old Root much sooner than the other, stand in need of fit Organs for receiving their Nourishment.

I have sometimes taken up some, through the Middle of which hath been a Root of the *Gramen caninum*, or Couch Grass, which some People have imagined had Strength enough to force its Way through the Crocus

Root; but the Truth is, the Root of the Grass closely, adhering to the old Root of the Crocus, just at the Place where the young Roots were emitted, these young Roots, being quick of Growth, inclosed the Root of the Grass, and thus I have seen several Roots run through each other in the same Manner.

But besides these Offsets mentioned, directly upon the upper Part of the Root is one large Root formed, of equal Bigness with the old one, and this is the Time that the Root is *Radix gemina*, as *Tournefort* calls it; for they are not so at any other Season, and therefore I think it a very improper Appellation, for when the new Roots are perfectly formed, the old ones, with their Coats, fall off and die, and leave the new Roots all single. This has occasioned several People to doubt of what *Tournefort* had said of the Roots, till I took up some Plants at that Season, and with them the two Roots of equal Bigness, *i. e.* the old one at the Bottom, and the new one at the Top.

Dr. *Blair* also happening, in viewing a Root, to be surpris'd with a different Appearance from what he had seen before, or heard of, sent me another Letter.

The Manner of the Root was thus; from the upper Part of the Bulb, where it sends forth all the Leaves within a common Tunicle, at the Exit there was an Appendix about an Inch and a Half long, about the Grossness of a large Turkey, or Goose Quill, cylindrical and blunt, without the least radical Fibre, by which it might receive the Nourishment; smooth or polished, and bluish in the Surface, consisting of several circular Lines, when cut transversely; white, with a hard greenish Center like a Carrot, when it hath pushed forth the flowering Stem, not unlike the Stolones of some running Root, such as the Mints below Ground, only the Extremity descended obliquely, instead of ascending, to send forth Leaves to produce a new Plant, and what is most remarkable, this did not happen to one or two Plants, but to the whole Bundle, which were above twenty distinct Sets, differing in nothing but *majus* and *minus*; the Bulb seemed at the same Time to be pined and emaciated, though it emitted large radical Fibres like those of a Leak.

I, having received this Account from him by Letter, sent him the following Answer:

I received yours in Answer to my last, with the Figure of the Roots of some Sets of *Crocus Autumnalis* you have taken out of the Ground; I have found a Figure in *Dodoneus* which corresponds with it, and those Roots are no new Thing with the Saffron Gardeners, who always throw them away when they make fresh Plantations.

Your Figure does not agree with my Tap Roots, as you will see by the Figure taken as just from the Life as I could. In mine, you will find the Bulb turned Sideways, which I still find to be constant in all the Roots I have examined, which have been a great many, and makes me suspect these Tap Roots are occasioned by the accidental Position of the Roots in planting, which may retard the ascending Sap, the flowering Stem being thereby turned into a crooked Figure, and the Tap Roots are full of longitudinal Vessels of a considerable Dimension, so that the greater attracting Power of the Sap being hereby

hereby diverted downwards, the Flower Stem may be quite destitute of proper Nourishment.

The Method you propose to remedy this Inconveniency, will not do, for I have removed some of these Roots at the Season when the Tap Roots were forming, and this alone destroyed them all; so that I am persuaded, the cutting them off entirely will kill them.

The Method I used with the Jonquils was, to lay some Tiles just under the Roots, to prevent their running downwards, but this has not answered, nor do I think it possible wholly to recover them; for the Alteration is not only in the Root and Flower, but also in the Leaf and Blade, which before was fistulous; but, after this Alteration in the Root, becomes a plain sulcated Leaf, and if it ever blossoms after, the Flowers are large and single, which before were small and double, but the Saffron, after the Change of its Roots, produces a small narrow Blade, seldom half the Length of those in a natural State.

Upon this Dr. Blair formed this Conclusion:

These additional Observations plainly shew, that neither the carrotty Root, nor the bastard Tap Root, as I may call it, are merely accidental, or what may be called *Lusus naturæ*, but certain Diseases incident to such Roots; for were they accidental, they would not have the same Appearances to different Persons in different Soils and Climates, nor would so many taken up together have such a Resemblance to each other, as I have twice observed.

CROTOLARIA. Lin. Gen. Plant. 771. Dill. Eltb. 122. Tourn. Infl. R. H. 644. [of Κρόταλον, Gr. Rattle.

The Characters are,

The Emplacement of the Flower is divided into 3 large Segments; the two upper resting on the Standard, the lower is concave, trifid, and is situated below the Keel. The Flower is of the Butterfly Kind; the Standard is large Heart-shaped, and pointed; the Wings are oval and half the Length of the Standard; the Keel is pointed and as long as the Wings; it hath ten Stamina which are united, terminated by single Summits, and an oblong reflexed Germen, supporting a single Style, crowned by an obtuse Stigma. The Germen becomes a short turgid Pod with one Cell, opening with two Valves, and filled with Kidney-shaped Seeds.

The Species are,

1. **CROTOLARIA foliis simplicibus ovatis, stipulis semicordatis, ramis tetragonis.** Flor. Zeyl. 277. *Crotolaria* with single oval Leaves, Heart-shaped Stipule, and four cornered Branches. This is the *Crotolaria Asiatica folio singulari verrucoso, floribus cæruleis.* H. L. 199. *Asiatick Crotolaria* with a single watered Leaf, and blue Flowers.

2. **CROTOLARIA foliis simplicibus lanceolatis pilosis, petiolis decurrentibus.** *Crotolaria* with single, hairy Spear-shaped Leaves, and running Foot Stalks. This is the *Crotolaria Americana, caule alato foliis pilosis, floribus in thyrsis luteis Martyn.* Cent. 43. *American Crotolaria* with a winged Stalk, and yellow Flowers in loose Spikes.

3. **CROTOLARIA foliis oblongo-ovatis birsutis sessilibus, stipulis acutis pedunculis longioribus.** *Crotolaria* with oblong, oval, hairy Leaves, sitting close to the Branches, pointed Stipule, and longer Foot Stalks. *Crotolaria birsuta minor Americana berbacea, caule ad summum sagittato.* H. L. 202. Smaller hairy herbaceous *American Crotolaria* with a Stalk, Arrow-shaped at the Top.

4. **CROTOLARIA foliis simplicibus, lineari-lanceolatis birsutis petiolis decurrentibus, caule fruticoso.** *Crotolaria* with single narrow, Spear-shaped hairy Leaves, running Foot Stalks, and a shrubby Stalk. This is the *Crotolaria frutescens birsuta, flore luteo, ramulis alatis, foliis mucronatis.* Houst. Mss. Shrubby hairy *Crotolaria* with a yellow Flower, winged Branches, and pointed Leaves.

5. **CROTOLARIA foliis simplicibus lanceolatis, villosis, argenteis, sessilibus, siliquis pendulis.** *Crotolaria* with single, Spear-shaped, hairy, silvery Leaves sitting close to the Branches, and hanging Pods. *Crotolaria Asiatica, folio argenteo villoso, flore luteo, siliquis pendulis in Spicâ.* Boerb. Ind. *Asiatick Crotolaria* with a silvery hairy Leaf, a yellow Flower, and hanging Pods disposed in a Spike.

6. **CROTOLARIA foliis cordato-ovatis perfoliatis.** Lin. Sp. Pl. *Crotolaria* with oval Heart-shaped Leaves perforated by the Stalks. This is the *Crotolaria perfoliata folio.* H. E. *Crotolaria* with a thorough-wax Leaf.

7. **CROTOLARIA foliis simplicibus, oblongis canescentibus retusis.** Flor. Zeyl. 276. *Crotolaria* with single oblong, Wedge-shaped Leaves reflexed at the Top. This is the *Crotolaria Asiatica, floribus luteis, folio singulo cordiformi.* H. L. 200. *Asiatick Crotolaria* with yellow Flowers, and a single Heart-shaped Leaf.

8. **CROTOLARIA foliis simplicibus ovatis villosis, petiolis simplicissimis, ramis teretibus.** Hort. Cliff. 357. *Crotolaria* with single, oval, hairy Leaves, single Pedicles, and taper Branches. This is the *Crotolaria arborescens Africana, Styracis folio.* H. L. 170. *African Tree Crotolaria* with a Storax Tree Leaf.

9. **CROTOLARIA foliis ovatis sessilibus, ramulis angulatis birsutis, floribus lateralibus simplicissimis.** *Crotolaria* with oval Leaves, sitting close to the Branches, which are angular and hairy, and single Flowers proceeding from the Sides of the Branches.

The 1st Sort grows naturally in India. This is an annual Plant, which hath an herbaceous four cornered Stalk, arising about 2 Feet high, dividing into three or 4 Branches; these have also four acute Angles, and are garnished with oval, watered Leaves, of a pale green Colour, standing on very short Foot Stalks; the Flowers are produced in Spikes at the End of the Branches, and are of the Butterfly Shape, and of a light blue Colour; these are succeeded by short turgid Pods, which inclose one Row of Kidney-shaped Seeds. It flowers in July and August, and the Seeds ripen in Autumn.

This Plant is propagated by Seeds, which must be sown on a hot Bed in Spring, and when the Plants are come up an Inch high, they should be transplanted to another hot Bed to bring them forward, observing to shade them from the Sun, till they have taken new Root, after which they should have free Air admitted to them in Proportion to the Warmth of the Season, to prevent their being drawn up weak. When the Plants have acquired Strength in this Bed, they should be carefully taken up with Balls of Earth to their Roots, and each planted in a separate Pot, filled with light Kitchen Garden Earth, and plunged into a moderate hot Bed of Tanners Bark, carefully shading them till they are rooted again, then they must be treated as other tender Plants, giving them proper Air and Water; when the Plants are grown so tall as to nearly reach the Glasses of the hot Bed, the Pots may be removed into an airy

Glass Case, or Stove, where they may be screened from inclement Weather, and have proper Air in hot Weather; with this Treatment the Plants will flower in July, and continue to produce fresh Spikes of Flowers till the End of August, and those Spikes of Flowers which appear early in the Season, will be succeeded by ripe Seeds in September, soon after which the Plants will decay.

The 2d Sort grows naturally at *La Vera Cruz* from whence the Seeds were sent me; this rises with a compressed winged Stalk near 3 Feet high, putting out several Side Branches, garnished with Spear-shaped Leaves near three Inches long, and one broad, which are covered with soft Hairs, and sit close to the Branches, alternately; from the Foot Stalks of each there runs a Border or leafy Wing, along both Sides of the Branches; the Flowers are produced in loose Spikes at the End of the Branches, of a pale yellow Colour, the Standard being stretched out a considerable Length beyond the Leaves. These are succeeded by short turgid Pods, which, when ripe, are of a deep blue Colour, having one Row of small Kidney-shaped Seeds which are of a greenish brown Colour. This flowers and seeds about the same Time with the former, and requires the same Treatment.

The 3d Sort was sent me from *South Carolina*, and *Jamaica*; it grows naturally in several Parts of *America*; this is an annual Plant, which rises with a slender Stalk a Foot and a Half high, dividing into 3 or 4 spreading Branches, garnished with oblong oval Leaves fitting close. The upper Part of the Branches have two leafy Borders or Wings, running from one Leaf to the other, but the lower Part of the Branches have none; the Foot Stalks of the Flowers, arise from the Side of the Stalk, those from the lower Part of the Branches are above a Foot long, the upper are about six Inches, they are very slender, and sustain one or two pale yellow Flowers at their Tops, which are not more than half so large as the former Sort, and are succeeded by very short turgid Pods, in which are inclosed three or four smooth Kidney-shaped Seeds. This Sort requires the same Culture as the two former, and flowers at the same Season.

The 4th Sort grows naturally in *Jamaica*; this rises with a shrubby taper Stalk near 4 Feet high, sending out many Side Branches which are very slender, ligneous, and covered with a light brown Bark; these are garnished with very narrow Spear-shaped Leaves which are hairy, and sit close to the Branches; the younger Shoots have a leafy Border or Wing on two Sides, but the old Branches have none; the Flowers are produced near the End of the Branches, 3 or 4 growing alternate on a loose Spike, they are of a dirty yellow, and small; the Pods which succeed them are about an Inch long, very turgid, and of a dark blue when ripe. This Sort is propagated by Seed, which should be sown on a hot Bed, and the Plants treated in the same Manner as those before, but in Autumn they should be placed in the Stove, where they will live through the Winter, and flower early the following Summer, so will perfect their Seeds very well.

The Seeds of the 5th Sort were brought me from the Coast of *Malabar*, which succeeded in the *Chelsea* Garden. This rises with an angular Stalk near 4 Feet high,

dividing upward into 3 or 4 Branches, garnished with narrow Spear-shaped Leaves placed alternately on very short Foot-Stalks, pretty closely covered with soft silvery Hairs. The Flowers are produced at the End of the Branches, in loose Spikes; these are large, of a deep yellow, and the Style stands out beyond the Standard. The Flowers are succeeded by large turgid Pods, containing one Row of large Kidney-shaped Seeds.

This Plant is annual in *England*, but by the lower Part of the Stalk growing woody, it appears to be of longer Duration in the Country where it naturally grows; though it will not live through the Winter here; for if the Plants are placed in a Stove, the Heat is too great for them; and in a Green-house they are very subject to Mouldiness in damp Weather. I have sown the Seeds of this in the full Ground, where the Plants have grown upward of 3 Feet high, and have flowered very well, but no Pods were formed on these; and when they have been treated tenderly, the Plants have grown much larger, and produced a greater Number of Flowers, but have produced no Seeds. The only Way by which I could ever obtain any Seeds, was by raising the Plants in Pots on hot Beds, and the Beginning of July turning them out of the Pots into the full Ground, on a very warm Border under a Wall, in which Situation they flowered very well, and some Pods of Seeds were ripened.

The 6th Sort was sent me by Dr. Dale, from *South Carolina*, who had the Seeds sent him from the Country at a great Distance from the *English* Settlements. By the Description sent me with the Seeds, it grows with a shrubby Stalk 4 or 5 Feet high, but the Plants which were raised here, perished at the Approach of Winter, having only flowered, without producing any Pods. The Stalks are round, and covered with a light brown Bark, these are garnished with smooth, oval, Heart-shaped Leaves, about 4 Inches long, and near 3 broad; surrounding the Stalk in such a manner as if it were run through the Middle of the Leaves. The Flowers grow singly, sitting close to the Bosom of each Leaf, toward the upper Part of the Branches; they are of a pale yellow Colour, and appear here in August, but as the Plants did not produce any Pods, I can give no Account of them. This is one of the most singular Plants of the Genus I have yet seen.

The 7th Sort rises with an herbaceous Stalk near 3 Feet high, dividing upward into several Branches, garnished with oblong Leaves, which are narrow at their Base, but gradually widen to the Top, where they are rounded and indented in the Middle in the Shape of a Heart; they are of a pale green, and smooth. The Flowers are produced in Spikes at the End of the Branches, they are pretty large, and of a yellow Colour. These appear in July, and the Seeds ripen in Autumn, provided the Plants are brought forward in Spring, and afterward treated as hath been directed for the first Sort. This grows naturally in the Island of *Ceylon*, and is an annual Plant, perishing soon after it perfects Seeds.

The 8th Sort grows naturally at the *Cape of Good Hope*, from whence I received the Seeds. This rises with a shrubby Stalk about 5 Feet high, dividing into several Branches, garnished with roundish Leaves, sitting close to the Branches; they are of a hoary green, and soft.

soft to the Touch, the Branches are taper and smooth; the Flowers are produced at the End of the Branches in loose Spikes; they are about the Size of those of the first Sort, and of a fine blue Colour.

This Plant flowers in June and July, and sometimes will ripen its Seeds in Autumn. It is propagated by Seeds, sown on a good hot Bed in Spring, and when the Plants are fit to remove, should be each transplanted into a small Halfpenny Pot, and plunged into a hot Bed of Tanners Bark, and after must be treated as the 4th Sort, placing the Plants in a moderate Stove in Winter, otherwise they cannot be preserved in England; the second Year the Plants will flower, and with proper Care their Seeds will ripen.

The 9th Sort was sent me from Campeachy, where the Plant grows naturally; this rises with a taper upright Stalk near 3 Feet high, dividing upward into several Branches, which grow erect, and are hairy; they are garnished with oval, Spear-shaped Leaves of a pale green Colour; the Flowers are produced singly from the Side of the Branches, of a bright yellow, and are succeeded by short turgid Pods, having one Row of Kidney-shaped Seeds. It flowers in July and August, and with the same Treatment as the first Sort, will perfect Seeds in Autumn. This is an annual Plant, which perishes soon after the Seeds are ripe.

As most of these Plants are annual, they require to be brought forward in Spring, otherwise the Summers are too short for them to perfect Seeds; and unless carefully managed, they will not flower well here; for in general the Summers in this Country are not favourable for such tender Plants. Therefore in order to have these tender annuals in Perfection; there should be a low Glass Case erected about five or six Feet high, which should be made with Glasses to open or slide down on every Side, as should also the Top on both Sides, having sliding Glasses, that the Plants may have Sun and Air on every Side; in this there should be a Pit for Tanners Bark to make a hot Bed, the whole Extent, (a particular Description of which will be exhibited under the Article Stove) in this hot Bed may be placed all the very curious tender annual Plants, where the Sun will constantly shine on them, so long as he makes his Appearance above the Horizon, and here they may have Plenty of free Air admitted at all Times, when the Weather is warm, so may be brought to equal Perfection, as in the warm Countries where they naturally grow; for the Warmth of the Tan to the Roots, and the Heat of the Sun through the Glasses, will in Summer, be equal to the Heat of most Countries.

These Plants naturally grow on sandy light Soils, so should always be planted in such, and the Pots must not be too large, for in such they will not thrive; when they have filled the small Pots with their Roots in which they were first planted, they should be shaken out, and put into penny Pots, which will be large enough for all the annual Kinds, but those of longer Duration will require Pots a little larger the following Spring. The Waterings of these Plants should be performed with Caution, for too great Moisture will rot the Fibres of their Roots; in Summer, if they are gently watered three or four Times a Week in hot Weather, it will be sufficient.

I have not here enumerated any of the Plants which have trifoliate Leaves, but shall refer them to the Genus *Ononis*, under which *Tournefort* and most other Botanists have placed them.

CROTON. *Lin. Gen. Plant.* 960. *Ricinoides. Tourn. Inst.* 655. *Tab.* 423. Bastard Ricinus.

The Characters are,

It hath male and female Flowers in the same Plant; the Flowers have a 5 leaved Empalement, they have 5 Petals, those of the male being no larger than the Leaves of the Empalement; the male have 5 nectarious Glands, which are small, and fixed to the Receptacle; these have 10 or 15 Stamina, joined at their Base, and terminated by twin Summits. The female Flowers have a roundish Germen, supporting 3 reflexed spreading Styles, crowned by bifid reflexed Stigmas; the Germen becomes a roundish three cornered Capsule, with three Cells, each containing a single Seed.

The Species are,

1. *CROTON foliis rhombeis repandis, capsulis pendulis caule herbaceo.* *Hort. Upsal.* 200. Croton with rhomboid reflexed Leaves, pendulous Capsules, and an herbaceous Stalk. This is the *Ricinoides ex qua paratur. Tournsol. Gallorum. Tourn. Inst.* 655. Bastard Ricinus from which the Tournsol of the French is made.

2. *CROTON foliis ovato-lanceolatis hirsutis, crenatis, floribus conglomeratis sessilibus.* Croton with oval Spear-shaped, hairy, crenated Leaves, and Flowers growing in Clusters, sitting close to the Stalks. *Ricinoides herbacea, folio subrotundo serrato, fructu parvo conglomerato. Houst. Mss.* Herbaceous Bastard Ricinus, with a roundish Leaf, and small Fruit growing in Clusters.

3. *CROTON foliis ovato-lanceolatis, minimè serratis, caule herbaceo hirsuto, floribus alaribus pedunculis longioribus.* Croton with oval Spear-shaped Leaves, slightly sawed, a hairy herbaceous Stalk, and Flowers proceeding from the Sides of the Stalks, standing upon longer Foot Salks. *Ricinoides palustre, foliis oblongis serratis, fructu bispido. Martyn. Cent.* 38. Marsh Bastard Ricinus with oblong sawed Leaves, and a prickly Fruit.

4. *CROTON foliis inermi-serratis, inferioribus quinquelobis, superioribus trilobis.* *Hort. Cliff.* 445. Croton with Leaves smoothly sawed, the lower ones having 5 Lobes, and the upper three. *Ricinoides herbacea, foliis trifidis vel quinquesidis & serratis. Houst. Mss.* Herbaceous Bastard Ricinus with trifid, or quinquefid sawed Leaves.

5. *CROTON tetraphyllum, foliis lanceolatis, acuminatis, subtus caesis, caule herbaceo ramoso.* Four-leaved Croton with Spear-shaped pointed Leaves, gray on their under Side, and a branching herbaceous Stalk. This is the *Ricinoides humilis foliis oblongis acuminatis, subtus caesis. Houst. Mss.* Dwarf Bastard Ricinus with oblong pointed Leaves, and gray on their under Side.

6. *CROTON foliis lanceolatis glabris, caule fruticoso, floribus alaribus & terminalibus.* Croton with smooth Spear-shaped Leaves, a shrubby Stalk, and Flowers growing from the Sides and Tops of the Branches. *Ricinoides frutescens, lauri folio, calice amplissimo viridi. Houst. Mss.* Shrubby Bastard Ricinus, with a Laurel Leaf, and a very large green Empalement to the Flower.

7. *CROTON foliis cordatis, acuminatis, subtus tomentosis, floribus alaribus sessilibus, caule fruticoso.* Croton with Heart-shaped pointed Leaves, woolly on their under

Side, and Flowers growing close to the Sides of the Stalks, which are shrubby.

8. *CROTON foliis lineari-lanceolatis, glabris, subtus argenteis, caule fruticoso, floribus spicatis terminalibus.* Croton with narrow Spear-shaped smooth Leaves, white on their under Side, a shrubby Stalk, and Flowers growing in Spikes at the Ends of the Branches. This is the *Ricinoides frutescens odorata, foliis angustis, subtus albican-tibus.* Houst. Mss. Bastard shrubby *Ricinus*, smelling sweet, with narrow Leaves, whitish on their under Side; called wild, or Spanish Rosemary, in Jamaica.

9. *CROTON foliis oblongo-cordatis tomentosis, caule fruticoso ramoso, floribus spicatis terminalibus.* Croton with oblong Heart-shaped woolly Leaves, a shrubby branching Stalk, and Flowers growing in Spikes at the Ends of the Branches. This is the *Ricinoides Americana frutescens, Albææ folio.* Plum. Cat. Shrubby American Bastard *Ricinus* with a Marshmallow Leaf.

10. *CROTON foliis ovatis tomentosis, integris, serratis, Hort. Cliff. 444.* Croton with oval woolly Leaves, which are entire, and sawed. This is the *Ricinus humilis foliis subrotundis serratis, subtus argenteis, flore fructuque conglomeratis.* Houst. Mss. Dwarf *Ricinus* with roundish sawed Leaves, silvery on their under Side, and a Flower and Fruit growing in Clusters.

11. *CROTON foliis cordatis acutis, subtus tomentosis, caule fruticoso, floribus spicatis terminalibus & alaribus.* Croton with pointed Heart-shaped Leaves, woolly on their under Side, a shrubby Stalk, and Flowers growing in Spikes on the Tops and Sides of the Branches. This is the *Ricinus salviaæ folio utrinque molli.* Pet. Hort. Sicc. *Ricinus* with a Sage Leaf, and soft on both Sides.

The 1st Sort grows naturally in the South of France, from whence I received the Seeds; this is an annual Plant, which rises with an herbaceous branching Stalk, about 9 Inches high, garnished with irregular, or rhomboidal figured Leaves, near two Inches long, and one Inch and a Quarter broad in their widest Part; these stand upon slender Foot Stalks, near 4 Inches long. The Flowers are produced in short Spikes from the Side of the Stalks, at the End of the Branches; the upper Part of the Spike is composed of male Flowers, having many Stamina, which coalesce at the Bottom; the lower Part hath female Flowers, which have each a roundish 3 cornered Germen, which afterward becomes a roundish Capsule with 3 Lobes, having 3 Cells, each including one roundish Seed. This flowers in July, but rarely ripens Seeds in this Country.

The Seeds should be sown early in Spring, on a Border of light Earth, in a warm Situation, where they are designed to remain, and when the Plants come up, they should be thinned where too close, leaving them six Inches asunder, after this they require no Care but to keep them clean from Weeds. If the Summer proves favourable, the Plants will flower in July, and in very warm Autumns they sometimes perfect Seeds.

This is the Plant from which the *Tournsole* is made, used for colouring Wines and Jellies; it is made of the Juice which is lodged between the Empalement and the Seeds, which, if rubbed on Cloths at first appears of a lively green, but soon changes to a bluish purple Colour; if these Cloths are put into Water, and afterward wrung, they will dye the Water to a Claret Colour; the Rags thus dyed, are brought to England, and sold in the Druggists Shops by the Name of *Tournsole*.

The 2d Sort grows naturally at *La Vera Cruz*, from whence the Seeds were sent me; this is an annual Plant, which rises about a Foot high; it hath an angular Stalk, closely covered with small bristly Hairs, which sting; the Branches are naked from their Divisions to the Top, where they are garnished with a few oval Spear-shaped Leaves, sawed on their Edges; they are an Inch and a Half long, and 3 Quarters of an Inch broad, of a light green, standing on Foot Stalks one Inch long. The Flowers are produced in close short Spikes at the End of the Branches, those on the upper Part being male, and the lower female; they are white, and the male soon falls away, but the female are succeeded by roundish Capsules, having 3 Lobes; these grow in close Clusters, they have 3 Cells, each containing one roundish Seed. It flowers in July, and the Seeds ripen in Autumn.

The 3d Sort was discovered by the late Dr. *Houssoun*, at *La Vera Cruz*, from whence he sent me the Seeds; this is also an annual Plant, which grows naturally in low marshy Grounds, where it hath a very different Appearance from what it puts on when sown upon dry Land; those of the watery Places have broad flat Stalks, and Leaves 3 Inches long, which are scarce a Quarter of an Inch broad; these are rough, and but little indented on their Edges, but those Plants upon dry Ground have oval Leaves 3 Inches long, and upwards of two Inches broad, which are sawed on their Edges. The Flowers are produced at the Wings of the Leaves, in short loose Spikes, having 4 or 5 herbaceous male Flowers at the Top of each, and 3 or 4 female Flowers at the Bottom, which are succeeded by roundish Capsules with 3 Lobes, covered with a prickly Husk; these have 3 Cells, each inclosing a single Seed. It flowers and seeds about the same Time as the former.

The 4th Sort was discovered by the same Gentleman, at the same Place; this is an annual Plant, which rises with a taper herbaceous Stalk, a Foot and a Half high, dividing into several Branches, garnished with smooth Leaves, standing on very long Foot Stalks, and are for the most part placed opposite, as are also the Branches; the lower Leaves are divided deeply into 5 oblong Leaves, and the upper into 3, which are slightly sawed on their Edges, and end in acute Points. The Flowers are produced in loose Spikes at the End of the Branches, those on the upper Part being male, and the lower female, they are of a whitish herbaceous Colour; the female Flowers are succeeded by oblong Capsules, having 3 Lobes, which open in 3 Parts, having 3 Cells, each containing one oblong Seed. This flowers and seeds at the same Time as the former Sorts.

The 5th Sort was found growing naturally at the *Havannab*, by the late Dr. *Houssoun*, who sent me the Seeds; this is an annual Plant, which rarely grows more than 6 Inches high, dividing into 2 or 3 Branches, the lower Parts of these are garnished at each Joint with 4 Leaves placed in form of a Cross, 2 of which are 3 Inches long, and one Inch broad near their Base, ending in acute Points; these stand opposite, and the other 2 Leaves between these are about 2 Inches long, and a Quarter of an Inch broad; they are of a light green on their upper Side, and of a gray or Ash Colour on their under. The Flowers are produced in long loose Spikes at the Top of the Stalks, 2 or 3 of these Spikes arising from the same Joint; the upper Part of these Spikes have male, and

and the lower female Flowers, of an herbaceous Colour; the female Flowers are succeeded by round Capsules with 3 Cells, each containing one roundish Seed. This flowers and seeds about the same Time with the former Sorts.

The 6th Sort was discovered in the Island of *Jamaica*, where it grows naturally. It rises with a shrubby Stalk to the Height of 7 or 8 Feet, which is covered with an Ash-coloured Bark, and divides into many slender Branches upward; some of these Branches are terminated by 5 or 6 smaller, which arise from the same Joint; these are naked below, but toward their upper Part are garnished with smooth Spear-shaped Leaves, about two Inches and a Half long, and 3 Quarters of an Inch broad, standing on pretty long Foot Stalks without Order; the Flowers are produced in short Spikes at the End of the Branches; they are of an herbaceous Colour, and inclosed in large green Empalements.

The 7th Sort was sent me from *Jamaica*; this rises with a shrubby Stalk, 7 or 8 Feet high, sending out many irregular Branches, covered with an Ash-coloured Bark, and garnished with Heart-shaped Leaves, near 4 Inches long, and 2 broad in their widest Part, ending in acute Points; they are of a light green on their upper Side, but woolly on their under, standing on slender Foot Stalks without any Order, sometimes single, and at others, 2 or 3 arise from the same Joint. The Flowers are produced in short Spikes from the Side of the Branches, they are of a whitish green Colour, and the female Flowers are succeeded by Capsules, having 3 Cells, each including a single Seed.

The 8th Sort grows naturally in *Jamaica*; this rises with a shrubby Stalk, about 6 or 7 Feet high, sending out many Side Branches, covered with a smooth Bark, of a yellowish white Colour, garnished very closely with narrow stiff Leaves, near 3 Inches long, and about one Eighth of an Inch broad, of a light green their upper Side, but their under Side is the same Colour as the Bark, the Mid-rib is furrowed on their upper Side, and very prominent on the lower; the upper Part of the Branches divide into 4 or 5 smaller, which arise from the same Joint, and are nearly equal in their Length, between these arises a long loose Spike of whitish green Flowers. The whole Plant hath an aromack Odour when rubbed. The Seeds grow in roundish Capsules having 3 Cells, each including a single Seed.

The 9th Sort grows naturally in *Jamaica*; this rises with a shrubby Stalk 6 or 7 Feet high, dividing upward into several Branches, covered with a yellowish Down; these are garnished with long Heart-shaped Leaves, ending in acute Points; these are 2 Inches and a Half long, and one broad in their widest Part, standing on long Foot Stalks, and covered on both Sides with a woolly Down of the same Colour as the Branches. The Flowers are produced on long close Spikes at the End of the Branches; the male Flowers, situated on the upper Part of the Spikes, have white Flowers of one Leaf, divided into 3 Parts, almost to the Bottom, and have 5 taper-Stamina, situated in the Bottom. The female Flowers, on the lower Part of the Spikes have large woolly Empalements, and are succeeded by round Capsules with 3 Cells, each including a single Seed.

The 10th Sort was discovered at *Campeachy*, from whence I received the Seeds; this is an annual Plant, which rises with an herbaceous Stalk a Foot and Half

high, dividing toward the Top into several small Branches, garnished with oval woolly Leaves, near 3 Inches long, and 2 and a Half broad in the Middle, standing on hairy Foot Stalks 3 Inches long. The Flowers are produced at the Extremity of the Branches, in short close Spikes or Clusters, sitting close between the Leaves; they are small, of a whitish green, and the female Flowers are succeeded by small round Capsules inclosed by the woolly Empalement; they have 3 Cells, but seldom more than one of them contains Seed. It flowers in *July*, and the Seeds ripen about a Month after.

The 11th Sort rises with a shrubby Stalk near 4 Feet high, dividing into many small Branches, which have a silvery Bark, and are garnished with small Heart-shaped Leaves, about 3 Quarters of an Inch long, and half as broad at their Base, ending in acute Points; these are woolly on both Sides, but their under Side is silvery, their upper Side of a yellowish green. The Flowers are produced in short Spikes, they are small, white, and have woolly Empalements. The female Flowers on the lower Part of the Spikes are succeeded by roundish Capsules with 3 Cells, each containing one Seed.

All these except the 1st, are Natives of warm Countries, so will not thrive in *England*, unless tenderly treated. They are all propagated by Seeds; those which are annual perfect their Seeds in *England*, but the shrubby Sorts very rarely arrive to that Perfection, so their Seeds must be procured from the Countries where they naturally grow. The Seeds must be sown on a hot Bed early in Spring, and when the Plants are fit to remove, they should be each transplanted into a small Pot, and plunged in a moderate hot Bed of Tanners Bark, where they should be shaded from the Sun till they have taken fresh Root; then they must have Air admitted to them daily, in Proportion to the Warmth of the Season; they must also be frequently refreshed with Water, particularly the 2d, 3d, and 4th Sorts, which will often require Water, but the others should have it more sparingly. After the Plants are grown too tall to remain in the Frames, they should be removed, either into the Stove, or a Glass Case, where there is a hot Bed of Tanners Bark, into which the Pots should be plunged, and there the annual Sorts will flower and perfect their Seeds; but the shrubby Kinds must be removed into the Bark Stove in Autumn, and during the Winter Season should have but little Water; the Stove should be kept in a good Temperature of Heat, otherwise they will not live through the Winter in *England*.

As these Plants retain their Leaves all the Year, they make a pretty Variety in Winter, when intermixed with other Plants, whose Leaves are of different Forms and Colours from these.

CROWN IMPERIAL. See Petilium.

CRUCIANELLA. *Lin. Gen. Plant.* 118. *Rubra. Tourn. Inst. R. H.* 130. *Tab.* 50. Petty Maddar.

The Characters are,

The Flower hath a two-leaved Empalement, which is rigid and compressed. It hath one Petal, with a slender cylindrical Tube, longer than the Empalement, and cut into 4 Parts at the Brim. It hath 4 Stamina situated in the Mouth of the Tube, terminated by single Summits. It hath a compressed Germen, at the Bottom of the Tube, supporting a slender bifid Style, crowned by 2 obtuse Stigmas.

The

The Germen become 2 twin Capsules, each containing one oblong Seed.

The Species are,

1. *CRUCIANELLA erecta, foliis senis linearibus*. Hort. Upsal. 27. Upright *Crucianella* with six narrow Leaves. This is the *Rubeola angustiore folio*. Tourn. Inst. 130. Petty Madder with a narrower Leaf.

2. *CRUCIANELLA procumbens, foliis quaternis, lanceolatis, floribus spicatis*. Hort. Upsal. Trailing *Crucianella* with four Spear-shaped Leaves and spiked Flowers. *Rubeola latiore folio*. Tourn. Broad leaved Petty Madder.

3. *CRUCIANELLA procumbens, foliis quaternis, floribus subverticillatis*. Lin. Sp. Plant. 109. *Crucianella* with trailing Stalks, four Leaves at each Joint, and Flowers growing in Whorls. This is the *Rubeola maritima*. C. B. P. Maritime Petty Madder.

4. *CRUCIANELLA caule hispido, foliis lanceolatis birsutis oppositis, floribus umbellatis terminalibus*. *Crucianella* with a prickly Stalk, Spear-shaped hairy Leaves placed opposite, and Flowers growing in Umbels at the Ends of the Branches. This is the *Rubeola Americana birsuta, parietariae foliis, floribus umbellatis purpureis*. Houst. Mss. Hairy American Petty Madder with Pellitory Leaves and purple Flowers growing in Umbels.

5. *CRUCIANELLA foliis linearilanceolatis birsutis oppositis, caule erecto villoso, floribus solitariis alaribus*. *Crucianella* with narrow Spear-shaped hairy Leaves placed opposite, an erect hairy Stalk, and single Flowers proceeding from the Sides of the Branches.

The 1st Sort grows naturally in the South of France and Italy; this is an annual Plant, which rises with several upright Stalks a Foot high, which have 6 or 7 very narrow linear Leaves placed in Whorls, at each Joint. The Flowers grow in close Spikes at the Top and from the Side of the Branches; these are small, white, and not longer than the Empalement so make no great Appearance. It flowers in June and July, and the Seeds ripen in Autumn.

The 2d Sort grows in the Islands of the Archipelago, also about Montpellier; this is also an annual Plant, sending out several branching Stalks from the Root, which lie prostrate, and are garnished with 4 Spear-shaped Leaves at each Joint. The Flowers are produced in long Spikes at the Extremity of the Branches; these are very small, so make no Appearance. It flowers about the same Time as the former.

The 3d Sort is like the 2d in the Appearance of Leaves and Stalks, but the Flowers grow on the Side of the Stalks, almost in Whorls, and make little Appearance. This grows naturally on the Borders of the Sea, in the South of France and Italy.

These 3 Sorts are preserved in some Gardens for Variety; if the Seeds are sown on a Bed of light Earth in Spring, where they are designed to remain, they will require no other Culture, but to thin them where too close, and keep them clean from Weeds; or if the Seeds are permitted to scatter, the Plants will come up in the Spring, and require no other Treatment.

The 4th Sort hath 4 cornered rough prickly Stalks, which bend downward, and are garnished with Spear-shaped Leaves, which are hairy and stand opposite; the Flowers are produced in small Clusters at the End of the Branches, which are blue, and cut into 4 Parts the Top;

after these decay, they are succeeded by twin Capsules joined, in each of these is one oblong Seed.

The 5th Sort rises with a shrubby branching Stalk, near 3 Feet high, garnished with narrow Spear-shaped Leaves, covered with stinging Hairs. The Flowers are produced from the Wings of the Leaves, on each Side the Stalk singly; these are of a pale blue Colour, and are succeeded by twin Fruit like the former.

Both these Sorts grow naturally at La Vera Cruz in New Spain, from whence the Seeds were sent me by the late Dr. Housloun; and the Plants grew in the Chelsea Garden very well during the Summer Season, but perished in the Autumn before their Seeds were ripe.

CRUCIATA. See Valantia.

CRUPINA BELGARUM. See Serratula.

CUCUBALUS. Lin. Gen. Plant. 502. Tourn. Inst. R. H. 339. Tab. 176. Berry-bearing Chickweed.

The Characters are,

The Flower hath an oblong permanent Empalement of one Leaf, cut into 5 Parts. It hath 5 Petals, with Tails as long as the Empalement, but spread open at the Top. It hath 10 Stamina, 5 of which are alternately inserted in the Tail of the Petals; these are terminated by oblong Summits. In the Center is situated the oblong Germen, supporting 3 Styles, longer than the Stamina, crowned by oblong hairy Stigmas. The Empalement afterward becomes a pointed close Capsule with 3 Cells, opening at the Top in 5 Parts, and filled with many roundish Seeds.

The Species are,

1. *CUCUBALUS calycibus campanulatis, petalis distantibus, fructu colorato, ramis divaricatis*. Lin. Sp. Plant. 414. *Cucubalus* with a Bell-shaped Empalement, Petals standing asunder, a coloured Fruit, and divaricated Branches. This is the *Cucubalus Plinii*. Lugd. 1429. and the *Alfina scandens baccifera*. C. B. P. 250. Climbing Berry-bearing Chickweed.

2. *CUCUBALUS caulibus erectis glabris, calycibus subglobosis, flaminibus corollâ longioribus*. *Cucubalus* with smooth erect Stalks, globular Empalements, and Stamina longer than the Petals. This is the *Lycbuis sylvestris quæ beben album vulgò*. C. B. P. Wild Lycbuis, or white Behen of the Shop, called Spalling Poppy.

3. *CUCUBALUS calycibus subglobosis, caule ramoso patulo, foliis linearibus acutis*. *Cucubalus* with globular Empalements, a branching spreading Stalk, and narrow pointed Leaves. This is the *Lycbuis sylvestris quæ beben album vulgò, foliis angustioribus & acutioribus*. C. B. P. Wild Lycbuis, with narrower pointed Leaves.

4. *CUCUBALUS calycibus subglobosis glabris reticulato-venosis, capsulis trilocularibus corollis subnudis*. Flor. Succ. *Cucubalus* with smooth globular Empalements which have netted Veins, Capsules having 3 Cells, and naked Petals. This is the *Lycbuis Suecica beben album folio, habitu, calyce amplissimo: gumsepungar sive serotum arietis dicta*. Boerb. Ind. alt. Swedish Lycbuis with a white Behen Leaf and a large Empalement, called Gumsepungar.

5. *CUCUBALUS caulibus procumbentibus, calycibus amplissimis nervosis, foliis lanceolatis*. *Cucubalus* with trailing Stalks, very large nervous Empalements, and Spear-shaped Leaves. This is the *Lycbuis marina Anglica*. Lob. Icon. 337. English Sea Lycbuis.

6. *CUCUBALUS caulibus procumbentibus, calycibus amplissimis reticulato venosis, floribus pentagynis*. *Cucubalus* with

with trailing Stalks, large netted veined Empalements, and Flowers having five Styles. This is the *Lycnis maritima Anglica amplioribus foliis*. *Aet. Phil.* No. 399. *English Sea Lycnis* with larger Leaves.

7. *CUCUBALUS foliis obovatis carnosiss.* *Prod. Leyd.* 448. *Cucubalus* with oval fleshy Leaves. This is the *Lycnis maritima saxatilis, folio anacamferotis*. *Tourn.* Cor. 34. Rocky maritime *Lycnis* with an Orpine Leaf.

8. *CUCUBALUS floribus lateralibus decumbentibus, caule indiviso, foliis basi reflexis.* *Lin. Sp. Pl.* 414. *Cucubalus* with declining Flowers on the Sides of the Stalk, which is undivided, and Leaves reflexed at their Base. *Lycnis major noctiflora Dubrensis perennis.* *Raii Hist.* 995. Greater perennial Night-flowering *Lycnis* of Dover.

9. *CUCUBALUS foliis quaternis.* *Hort. Upsal.* 110. Four leaved *Cucubalus*. This is the *Lycnis caryophyllus Virginianus, gentiane foliis glabris quatuor ex singulis geniculis caulem amplexantibus flore amplo fimbriato.* *Raii Hist.* 1895. *Virginia Clove Lycnis*, with smooth Gentian Leaves, four at each Joint embracing the Stalk, and a large fringed Flower.

10. *CUCUBALUS calycibus striatis acutis petalis bipartitis, caule paniculato, foliis linearibus.* *Cucubalus* with striated acute Empalements, Petals divided in two Parts, a paniculated Stalk, and narrow Leaves. This is the *Lycnis noctiflora angustifolia odorata.* *Tourn. Inst.* Narrow leaved sweet-scented Night-flowering *Lycnis*.

11. *CUCUBALUS floribus dioicis, petalis setaceis indivisis.* *Hort. Cliff.* 272. *Cucubalus* with male and female Flowers on different Plants, and bristly undivided Petals. This is the *Lycnis viscosa, flore muscoso.* *C. B. P.* 206. Viscous *Lycnis* with a mossy Flower.

12. *CUCUBALUS acaulis.* *Flor. Lapp.* 184. *Cucubalus* without Stalk. This is the *Lycnis Alpina pumila, foliis gramineis, flore muscoso Alpinus Lycnoidis flore.* *C. B. P.* 206. Alpine Dwarf *Lycnis* with a grassy Flower, or Alpine Moss with a Flower of *Lycnis*.

13. *CUCUBALUS petalis bipartitis, floribus paniculatis, staminibus longis, foliis lanceolatis acutis.* *Cucubalus* with bifid Petals, Flowers growing in Panicles, long Stamens, and Spear-shaped acute Leaves. This is the *Lycnis altissima, ocyasstri facie, flore muscoso.* *Trumfset.* Tallest *Lycnis* with the Appearance of Wild Campion.

14. *CUCUBALUS foliis radicalibus ovatis acutis, caulibus lanceolatis oppositis, floribus paniculatis erectis.* *Cucubalus* with lower Leaves oval and pointed, those on the Stalks Spear-shaped and opposite, and Flowers growing in Panicles which are erect.

15. *CUCUBALUS petalis bipartitis, caule paniculato, foliis radicalibus ovato-lanceolatis caulibus linearibus.* *Cucubalus* with Petals divided in two Parts, a paniculated Stalk, whose lower Leaves are oval and Spear-shaped, and those on the Stalks very narrow.

The 1st Sort grows naturally in France, Germany, and Italy, in shady Places, and is seldom kept in Gardens, unless for Variety; it sends out many climbing Stalks, which grow 4 or 5 Feet high, where they meet with Support, otherwise they trail on the Ground; these Stalks send out Side Branches by Pairs, opposite, at each Joint; the Leaves are like those of Chickweed, and are placed opposite. The Flowers come out single at the End of the Branches, which have large inflated Empalements; they consist of 5 Petals, which are white,

and placed at a Distance from each other; these are succeeded by oval Berries, which, when ripe, are black and full of Juice, inclosing several flat shining Seeds. It flowers in June, and the Seeds ripen in Autumn. This hath a perennial creeping Root, whereby it is apt to multiply too fast in Gardens. It delights in Shade, and will thrive in almost any Soil.

The 2d Sort grows naturally in most Parts of England, where it is generally called Spatling Poppy. This stands in the Catalogue of medicinal Plants, under the Title of *Beben album*; the Roots are sometimes used and are accounted cordial, cephalick, and alexipharmick, It hath a perennial Root, which strikes deep into the Ground, so are not easily destroyed by the Plough, therefore it is frequently seen growing in Bunches among Corn. It is a rambling Weed, so is never cultivated.

The 3d Sort grows naturally on the Alps; this differs from the former, in having much longer and narrower Leaves, and the Stalks being more divided and spreading, nor do the Roots creep under Ground like that. These Differences are constant, for I have sown it above 20 Years, and never found it vary.

The 4th Sort grows naturally in Sweden, and other northern Countries, where it passes for the common Sort; but although it is there so, yet is very different from the 2d here mentioned, which is the Sort that grows common in most other Parts of Europe. The Stalks of this are much larger, the Leaves longer and more pointed; the Empalement of the Flower is curiously veined like Net Work, of a purplish Colour, whereas that of our common Sort is plain. These Differences are lasting, when the Plants are cultivated in a Garden.

The 5th Sort grows naturally on the Borders of the Sea, in many Parts of England. This is by some supposed to be the same as the 2d Sort, from which it greatly differs; the Stalks of this are weak, and trail on the Ground; the Leaves are shorter, those on the Stalks much broader, and the Empalement of the Flowers netted with purple Veins like the Swedish Sort before mentioned. I have cultivated this Plant in the Garden more than 30 Years, and have never found it vary.

The 6th Sort was found growing naturally in some Parts of England. This differs from the last, in having much longer trailing Stalks, larger Leaves, the Petals of the Flower are more than twice the Size of those, and the Flowers have Styles. All these Sorts have perennial Roots, and multiply too fast; therefore are only admitted into Botanick Gardens for Variety.

The 7th Sort was discovered by *Tournefort* in the Levant, who sent the Seeds to the Royal Garden at Paris. This puts out many oval thick succulent Leaves near the Ground, out of the Middle of which, arises an upright Stalk, about 15 Inches high, the lower Part of which is garnished with Leaves of the same Form and Consistence as the lower, but are smaller; these are placed opposite by Pairs; the upper Part of the Stalk divided into two smaller, on which stand a few small herbaceous Flowers at each Joint. It flowers in June, and sometimes ripens Seeds in Autumn. The Plant is biennial, generally perishing when it has produced Seeds; but unless it is sown upon a very dry Rubbish, in a warm Situation, the Plants will not live through the Winter in

in *England*; for when they are in good Ground, they grow large, and are so replete with Moisture, as to be affected by the first Frost in Autumn; but where they have grown on an old Wall, I have known them escape, when all those in the Ground were killed.

The 8th Sort grows naturally on the Cliffs near *Dover*. This hath a perennial Root, from which arises a single Stalk about a Foot high, garnished with long narrow Leaves placed opposite; the Flowers are produced from the Side of the Stalks, each Foot Stalk sustaining 3 Flowers; the Foot Stalks come out by Pairs opposite, the Empalement of the Flower is long and striped, the Flowers are of a pale red. These appear in *June*, and the Seeds ripen in Autumn.

The 9th Sort grows naturally in *Virginia*, and several other Parts of *North America*. This hath a perennial Root, from which arises 2 or 3 slender upright Stalks a Foot high, their lower Part being garnished with 4 Leaves at each Joint, placed in Form of a Cross; these are smooth, of a deep green, about an Inch and a Half long, and half an Inch broad near their Base, terminating in acute Points; the Joints of the upper Part of the Stalk are garnished with white fringed Flowers, standing single upon pretty long Foot Stalks, which come out by Pairs opposite. The Flowers appear in *June*, and in warm Seasons the Seeds will ripen in *England*.

The 10th Sort grows naturally in *Spain* and *Italy*. This is a perennial Plant, which rises with an upright branching Stalk a Foot and a Half high, garnished with very narrow Leaves placed opposite; the upper Part of the Stalk is very branching; some of these Branches are long, and others short; the Flowers stand on long naked Foot Stalks, each supporting 3 or 4 Flowers, which have long Tubes, with striped Empalements; the Petals are large, and deeply divided at Top; they are of a pale bluish Colour. These Flowers are closed all Day, but when the Sun leaves them, they expand, and then they have a very agreeable Scent. This Sort may be propagated by Seeds, which should be sown in Spring, upon a Bed of light Earth; when the Plants are fit to remove, they should be planted in a Nursery Bed, at about 4 Inches Distance, where they may remain till Autumn, when they may be planted in the Borders of the Flower Garden, where they are designed to remain. The following Summer these will produce Flowers, and ripen their Seeds in Autumn; but the Roots will continue several Years, provided they are not planted in rich Ground, where they are very subject to rot in Winter.

The 11th Sort grows naturally in *Austria*, *Silesia*, and *Italy*. This Sort is male and female in different Plants; it hath a thick fleshy perennial Root, which strikes deep into the Ground, sending out many oblong Leaves, which are broad at their Extremity, but contract narrower to their Base; from between these arise the Stalks, which in the male Plants often grow near 4 Feet high, but those of the female Plants are seldom above half so high; the Stalks are garnished with narrow Leaves placed opposite at each Joint, where there exudes a viscous clammy Juice, which sticks to the Fingers when handled; and the same Insects which settle upon those Parts of the Stalks, are thereby fasten-

ed so as not to get loose again. The Flowers of the male Plants are produced in loose Spikes from the lower Joints of the Stalk; but on the upper Part, they stand on single Foot Stalks in Clusters quite round the Stalks; these are small, of a greenish Colour, and have each 10 Stamina. The female Plants have 3 or 4 Flowers growing on each Foot Stalk, which arise from the Side of the Stalk. These are succeeded by oval Seed Vessels, containing many small Seeds. These flower in *June*, and the Seeds ripen in Autumn. This is propagated by Seeds, which should be sown where the Plants are designed to remain; for as they send out long Tap Roots, they do not bear transplanting, unless it is performed while the Plants are young. The Plants are very hardy, so will thrive in any Soil or Situation, but agree best with a dry Soil. It is necessary to have some Plants among the female, to have perfect Seeds.

The 12th Sort grows naturally on the *Alps*, and upon some Hills in the North of *England* and *Wales*. This is a very low Plant, with small Leaves, which spread on the Ground, and have the Appearance of Moss; the Flowers are small, erect, and rarely rise more than half an Inch high; they are of a dirty white Colour, and appear in *May*. This is perennial, and will not thrive but in a moist Soil and a shady Situation.

The 13th Sort grows naturally in *Italy* and *Sicily*. This is a perennial Plant, with large thick Roots, sending out many long Spear-shaped Leaves near the Root; between these arise round viscous Stalks, which grow 3 Feet high, garnished at each Joint by 2 long narrow Leaves ending in acute Points. The Stalks branch out into many Divisions, on the upper Parts of which the Foot Stalks of the Flowers arise from each Joint by Pairs opposite; each of these sustain 3 or 4 Flowers of an herbaceous Colour, whose Petals are divided into 2 Parts; the Flowers appear in *June*, and the Seeds ripen in Autumn. This is propagated by Seeds, as the 11th.

The 14th Sort grows naturally in *Spain*; this is a biennial Plant, which decays soon after it hath perfected Seeds; it hath many oval pointed Leaves near the Root, standing on long Foot Stalks; between these arise an upright Stalk, sending out 2 Side Branches at each Joint; placed opposite; under each of these is situated one Spear-shaped Leaf, ending in an acute Point; these Side Branches, and also the upright Stalk, are terminated by whitish Flowers, formed into a Panicle, and standing erect; these appear in *June*, and are succeeded by Seeds, which ripen in Autumn. This is propagated by Seeds, which may be sown on an open Border where the Plants are to remain, and require no Culture but to keep them clear from Weeds.

The 15th Sort grows naturally in *Italy*, from whence I received the Seeds; this is a perennial Plant, which hath many oval, Spear-shaped Leaves near the Root; the Stalks rise about 2 Feet high, they are viscous, and from each Joint comes out 2 Side Branches under which are situated 2 very narrow Leaves; the Stalks spread out and form a Sort of Panicle, and are terminated by Clusters of greenish Flowers, whose Petals are divided into 2 Parts. This flowers in *June*, and the Seeds ripen in Autumn. It is propagated as the 11th Sort, and requires the same Treatment.

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CUCULLATE PLANTS are so called, of *Cuculla*, Lat. a Hood or Cowl, such as Monks wear, because their Flowers resemble it.

CUCUMIS. Cucumber; in French *Concombre*.

The Characters are,

It hath male and female Flowers placed at Distances on the same Plant, these have a Bell-shaped Empalement of one Leaf, whose Border is terminated by 5 Bristles. The Flowers are Bell-shaped, have one Petal which adheres to the Empalement, and is cut into 5 oval rough Segments. The male Flowers have 3 short Stamina, which are inserted to the Empalement, two of which have bifid Tops. These are terminated by very narrow Summits or Lines, which run upward and downward, and adhere to the Outside. The female Flowers have no Stamina but have 3 small pointed Filaments without Summits. The Germen which is oblong, is situated under the Flower supporting a short cylindrical Style, crowned by 3 thick convex Stigmas, which are bipartite. The Germen afterward becomes an oblong fleshy Fruit with three Cells, including many oval flat pointed Seeds.

The Species are,

1. *CUCUMIS foliorum angulis rectis, pomis oblongis scabris*. Hort. Cliff. 451. Cucumber with Leaves having right Angles, and an oblong rough Fruit. This is the *Cucumis sativus vulgaris*. C. B. P. 310. The common Garden Cucumber.
2. *CUCUMIS foliorum angulis rectis, pomis longissimis glabris*. Cucumber with Leaves having right Angles, and a very long smooth Fruit. This is the *Cucumis flexuosus*. C. B. P. 310. The long Turkey Cucumber.
3. *CUCUMIS foliis rotundato-angulatis, pomis acutangulis*. Lin. Sp. Plant. 1011. Cucumber with round, angular Leaves, and a Fruit having acute Angles. This is the *Cucumis Aegyptius rotundifolius*. Tourn. Inst. 104. Round leaved Egyptian Cucumber, called *Cbate*.

The 1st Sort is the Cucumber generally cultivated for the Table, and is so well known as to need no Description. The 2d Sort is the long Turkey Cucumber, which is also pretty well known in England. The Stalks and Leaves of this Sort are much larger than those of the common Sort. The Fruit is generally twice the Length, and hath a smooth Rind; this is undoubtedly different from the common Sort, for I have cultivated it above 30 Years, and have not found it alter. There are green and white Fruit of this Sort, which differ but little except in their Colour, so I have not distinguished them as distinct Species; though I have also found them keep their Difference from Seeds. The white is less watery than the green, so is generally better esteemed. I have also received Seeds from China of another Sort, with a much longer Fruit, than the Turkey, but I have found this will degenerate in Time, and become more like the common Sort.

In Holland they cultivate a long white prickly Cucumber only, which is very different from the Turkey Cucumber, being near as rough as the common Sort, but this is not so hardy as our common Sort, so is not cultivated in England, but the Fruit is not so watery or full of Seeds as the common.

The 3d Sort is rarely cultivated but in Botanick Gardens, the Fruit being very indifferent, and the Plants being tender, require a good Heat to bring them to Per-

fection in England; these Plants ramble very far, so must have much Room, and are not very fruitful.

The common Sort is cultivated in 3 different Seasons: The 1st of which is on hot Beds under Garden Frames, for early Fruit; the 2d under Bell or Hand Glasses, for the middle Crop; and the 3d in the common Ground, for a late Crop, or to pickle.

I shall begin with giving Directions for raising Cucumbers early, which is what most Gentlemens Gardeners have an Emulation to exceed each other in; and some have been at the Pains and Expence to have ripe Fruit in every Month of the Year; which is rather a Curiosity than any real Advantage; for Cucumbers that are produced before April cannot be so wholesome as those that are later; for before the Sun hath Strength enough to warm the Beds through the Glasses in the Day Time, all the Heat must proceed from the Fermentation of the Dung, which must occasion a very considerable Steam, and the Air being pent up in the hot Bed, soon becomes rancid; and the Steam of the Bed being by the Cold of the Night condensed into large Drops of Water, these, being absorbed or inspired by the Plants, make the Fruit crude and unhealthy, especially when the Nights are very long. This, together with the great Expence and Trouble of procuring them earlier, having in some Measure got the better of Peoples Ambition, so that this is less practised than it hath been some Years since, but as there are many Persons, who yet value themselves on their Skill, in raising early Cucumbers, we may probably be censured for Deficiency in what they call an essential Part of Gardening, should we omit the Method practised for raising these Fruit early in the Year. Therefore shall proceed to give such Directions, as if carefully attended to, will not fail of Success.

Those Persons who are very desirous to have early Cucumbers, generally sow their Seeds before *Christmas*, but the Generality of Gardeners commonly put their Seeds into the hot Bed about *Christmas*. Where you have the Convenience of a Stove for raising these Plants, it is attended with less Trouble than a common hot Bed, and is a much surer Method, because the Plants will have a much greater Share of Air, which will also be less mixed with damp or rancid Vapours, for by the Heat of the Fires, these will be dissipated, and the Temperature of the Air is kept more equal than can be done with all possible Care in a hot Bed, at a Season when we enjoy but little Sun; therefore where there is this Convenience, the Seeds should be sown in small Pots, filled with light dry Earth and plunged into the Tan Bed, in the warmest Part of the Stove. The Pots with Earth should be plunged 3 or 4 Days before the Seeds are sown, that the Earth may be properly warmed to receive them; the Seeds should be at least 3 or 4 Years old, but if older, provided it will grow, it will be the better; if the Seeds are good, the Plants will begin to appear in about a Week or nine Days, at which Time there must be as many Halfpenny Pots filled with dry light Earth, as there are Plants designed for planting (always allowing for Loss; so that where 24 Plants are wanting, there should be 30 raised); these Pots should be plunged into the Bark Bed, that the Earth may be warmed to receive the Plants, which should be pricked into these Pots, as soon as the two first Leaves are raised above Ground;

into each of these Pots, may be two or three Plants pricked, but when they have taken Root, and are safe, one or two of the worst should be drawn out, being careful not to disturb the Roots of those which are left. If the Plants are designed to be soon ridged out, there may be two left in each Pot; but when they are to remain some Time before they are put out for good, there should but one Plant be left in the Pots. In the Management of these Plants there must be great Care taken, not to give them too much Water, and it will be very proper to put the Water into the Stove, some Hours before it is used, that the Cold may be taken off, but there must be Caution used, not to make it too warm, for that will destroy the Plants; they must also be guarded from the Moisture which frequently drops from the Glasses of the Stove, which is very destructive to these Plants while young; as these Plants must not be kept too long in the Stove lest they become troublesome to the *Ananas*, so there should be a proper Quantity of new Dung prepared for making a hot Bed to receive them; this must be in Proportion to the Quantity of Holes or Plants intended: For a middling Family 6 or 9 Lights of Cucumbers will be sufficient, and for a large one double the Quantity; but the Beds where they are designed to remain, need not be made so soon, but rather a small Bed of two Lights, in which the Plants may be trained up, till they have acquired a greater Share of Strength; and for this Bed, three good Cart Loads of Dung will be sufficient. This should be new, and not too full of Straw, nor should it want a proper Portion, this should be well mixed together and thrown in a Heap mixing some Sea Coal Ashes with it; after it hath lain in a Heap a few Days, and has fermented, it should be carefully turned over and mixed, laying it up again in a Heap, and if there is a great Share of Straw in it, there may be a Necessity for turning it over a third Time after having lain a few Days; this will rot the Straw and mix it thoroughly with the Dung, so there will be less Danger of its burning afterward when the Bed is made, which should be done, when the Dung is in proper Order. The Place where the hot Bed is made should be well sheltered by Reed Hedges, and the Ground should be dry; then there should be a Trench made in the Ground, of a proper Length and Breadth, and a Foot deep at least; into which the Dung should be wheeled and carefully stirred up and mixed, so that no Part of it should be left unseparated, for where there is not this Care taken, the Bed will settle unequally; there should also be great Care taken to beat the Dung down close in every Part of the Bed alike; when the Bed is made, the Frame and Glasses should be put upon it to keep out the Rain, but there should be no Earth laid upon the Dung, till 2 or 3 Days after, that the Steam of the Dung may have Time to evaporate: If there should be any Danger of the Bed burning, it will be proper to lay some short old Dung, or some Neats Dung, over the Top of the hot Dung about 2 Inches thick, which will keep down the Heat, and prevent the Earth from being burnt; after this there should be a sufficient Number of three Farthing Pots placed upon the Bed, filled with light dry Earth, and all the Interstices between them, filled up with any common Earth: In two or three Days, the Earth in these Pots will be of a proper Temperature of Warmth to receive the Plants,

which should be then turned out of the Halfpenny Pots, preserving the Ball of Earth to their Roots, and planted into the three Farthing Pots; then a little Water should be given them to settle the Earth about their Roots, being careful not to give them too much Wet, and as these will have such large Balls of Earth to their Roots, they will not feel their Movement, therefore will not require shading from the Sun; but the Glasses should be raised up a little, on the contrary Side from the Wind, to let the Steam of the Bed pass off, and they should be frequently turned in the Day Time, that the Wet occasioned by the Steam, may be dried, otherwise the Moisture will fall on the Plants, which will be very injurious to them. If the Bed should heat too violently, so as to endanger scalding the Roots of the Plants, the Pots may be raised so as to allow of a little Hollow at their Bottoms, which will effectually prevent it; and as the Heat declines, so the Pots may be settled down again: The Glasses of the hot Bed should be well covered with Mats every Night to keep the Bed in a proper Temperature of Heat, and great Care must be taken to admit fresh Air every Day to the Plants; to guard against the cold Winds, which usually blow at that Season; so that a Mat, or Canvas should be hung over the Opening made by raising the Glasses, to prevent the cold Air from rushing in too violently, and the Glasses should always be raised on that Side which is contrary to the Wind. The Plants will also require to be frequently watered, but it must be cautiously given them at this Season, and the Water should not be cold, but either placed in a Stove, or put into a warm Heap of Dung, to take off the Chill from it, before it is used.

If the Weather should prove bad, and the Heat of the Bed decline, there should be some hot Dung laid round the Sides of the Bed to renew the Heat, which must not be suffered to fail, for as the Plants have been tenderly brought up, so they must not suffer from Cold, for that will soon destroy them.

In this Bed the Plants may remain about three Weeks, in which Time if they have been properly managed, they will have obtained sufficient Strength to put out for good, therefore a proper Quantity of Dung should have been mixed and turned ready for making the Beds. The usual Quantity allowed for the Beds at this Season, is one good Cart Load, to each Light; this should be well mixed and turned over in the Manner before directed, then a Trench should be dug in the Ground, of the Length and Width of the intended Bed, into which the Dung should be wheeled, and properly worked according to the above Directions, and some old Dung, or Neats Dung spread over the Top; the Frames and Glasses should then be put on the Bed, which should be raised every Day to let the Steam of the Dung pass off, and in about three Days the Bed will be in a proper Temperature of Heat to receive the Plants; at which Time the Dung should be covered over with dry Earth about two Inches thick, and in the Middle of the Bed, it should be an Inch thicker, this should be laid upon the Dung, at least twenty-four Hours before the Plants are removed into the Bed, that the Earth may be properly warmed; then the Plants should be carefully shaken out of the Pots, preserving all the Earth to their Roots, and placed on the Top of the Earth in the Middle of the Bed.

Three

Three of these Plants will be sufficient for each Light, and these should be placed at about 7 or 8 Inches asunder, not all their Roots together as is too often practised. When the Plants are thus situated in the Bed, the Earth which was laid an Inch thicker in the Middle of the Bed, should be drawn up round the Ball which remained to the Roots of the Plants, into which their Roots will soon strike; there should always be a Magazine of good Earth laid under Cover to keep it dry, for earthing these Beds, for if it is taken up wet, it will chill the Beds, and occasion great Damps, therefore it is quite necessary to have a sufficient Quantity of Earth prepared long before it is used. When the Plants are thus settled, they must have proper Air and Water, according as they may require, being careful not to admit too much cold Air, or give too much Water; the Glasses should also be well covered with Mats every Night, to keep up the Warmth of the Bed, and some fresh Earth should be put into the Bed at different Times, which should be laid at some Distance from the Roots of the Plants, till it is warmed, and then should be drawn up round the Heap of Earth in which the Plants grow, to increase the Size; this should be raised to the full Height of the former Ball, that the Roots of the Plants may more easily strike into it; by this Method of supplying the Earth, the whole Surface of the Beds will be covered 9 or 10 Inches with Earth, which will be of great Service to the Roots of the Plants, for where the Earth is very shallow, the Leaves of the Plants will always hang in the Heat of the Day unless they are shaded; and the Plants will require more Water to keep them alive, than is proper to give them; therefore it will be found much the better Way to allow a proper Depth of Earth to the Beds: But the Reason of not laying the Quantity of Earth on the Bed when it is first made, is that the Dung should not be too much chilled by it, or that the Earth may not be burned, which might be endangered, were the whole Thickness to be laid on at once; besides, by thus gradually applying the Earth, it will be fresh, and much better for the Roots of the Plants, than that which has been long on the Bed, and has been too much moistened by the Steam arising from the Dung.

If the Heat of the Bed should decline, there should be some hot Dung laid round the Side of the Bed to renew the Heat, for if that should fail at the Time when the Fruit appears, they will fall off and perish, therefore this must be carefully regarded; and when the Plants have put out Side Branches (which the Gardeners call Runners) they should be properly placed, and pegged down with small forked Sticks to prevent their rising up to the Glasses, and also from crossing and entangling with each other, so that when they are properly directed at first, there will be no Necessity of twisting and tumbling the Plants afterward, which is always hurtful to them.

When the Earth of the Bed is laid the full Thickness, it will be necessary to raise the Frames, otherwise the Glasses will be too close to the Plants, but when this is done, there must be Care taken to stop the Earth very close round the Sides of the Frame, to prevent the cold Air from entering under them. The Watering and admitting fresh Air must be diligently attended to, otherwise the Plants will be soon destroyed, for a little

Neglect either of admitting Air, or letting in too much, or by over watering, or starving the Plants, will very soon destroy them past Recovery.

When the Fruit appears upon the Plants, there will also appear many male Flowers on different Parts of the Plant, these may at first Sight be distinguished; for the female Flowers have the young Fruit situated under the Flowers, but the male have none, but these have three Stamina in their Center with their Summits which are loaded with a golden Powder, this is designed to impregnate the female Flowers; and when the Plants are fully exposed to the open Air, the soft Breezes of Wind convey this Farina or male Powder from the male to the female Flowers, but in the Frames, where the Air is frequently too much excluded at this Season, the Fruit often drops off for Want of it: And I have often observed the Bees that have crept into the Frames when the Glasses have been raised to admit the Air, have supplied the Want of those gentle Breezes of Wind; by carrying the Farina of the male Flowers on their hind Legs into the female Flowers, where a sufficient Quantity of it has been left to impregnate them. For as the Bees make their Wax of the Farina or male Powder of Flowers, so they search all the Flowers indifferently to find it; and I have observed them come out of some Flowers with their hind Legs loaded with it, and going immediately into other Flowers which have none, they have scattered a sufficient Quantity of this Farina about the Style of the female Flowers to impregnate and render them prolific. These Insects have taught the Gardeners a Method to supply the Want of free Air, which is so necessary for the Performance of this in the natural Way; this is done by carefully gathering the male Flowers, at the Time when this Farina is fully formed, and carrying them to the female Flowers, turning them down over them, and with the Nail of one Finger gently striking the Outside of the male, so as to cause the Powder on the Summits to scatter into the female Flowers, and this is found to be sufficient to impregnate them, so that by practising this Method, the Gardeners have now arrived at a much greater Certainty than formerly to procure an early Crop of Cucumbers and Melons, and by this Method the Florists have arrived to greater Certainty of procuring new Varieties of Flowers from Seeds, which is done by mixing the Farina of different Flowers with each other.

When the Fruit of the Cucumbers are thus fairly set, if the Bed is of a proper Temperature of Warmth, they will soon swell, and become fit for Use, so all that is necessary to be observed, is to water the Plants properly, which should be done, by sprinkling the Water all over the Bed; for the Roots of the Plants will extend themselves to the Side of the Beds; therefore those who are inclined to continue these Plants as long as possible in Vigour, should add a sufficient Thickness of Dung and Earth all round the Sides of the Beds, so as to enlarge them to near double their first Width; this will supply Nourishment to the Roots of the Plants, whereby they may be continued fruitful great Part of the Summer; whereas, when this is not practised, the Roots of the Plants, when they have reached the Side of the Beds, are dried by the Wind and Sun, so that the Plants languish and decay long before their Time.

Those Gardeners, who are fond of producing early Cucumbers, generally leave 2 or 3 of their early Fruit, which are situated upon the main Stem of the Plant near the Root for Seed, which, when fully ripe, they carefully save to a proper Age for Sowing, and by this Method they find a great Improvement is made of the Seed, and this they always use for their early Crops only, for the succeeding Crops do not deserve so much Care and Attention.

I have here only mentioned the Method of raising the young Cucumber Plants in Stoves, for as these Conveniences are now generally made in curious Kitchen Gardens in most Parts of *England*, so this Method may be more universally practised; but in such Gardens where there are no Stoves, the Seeds should be sown upon a well prepared hot Bed; and here it will be the best Way to sow the Seeds in small Halfpenny Pots, because these may be easily removed from one Bed to another if the Heat should decline, or, on the contrary, if the Heat should be too great, the Pots may be raised up, which will prevent the Seed or the young Plants from being injured thereby. When the Plants are come up as was before directed, there should be a fresh hot Bed prepared, with a sufficient Number of Halfpenny Pots plunged therein ready to receive the Plants, which must be planted into them in the same Manner as was before directed; and the After-management of the Plants must be nearly the same; but as the Steam of the hot Bed frequently occasions great Damps, there must be great Care to turn and wipe the Glasses frequently, to prevent the condensed Moisture falling on the Plants, which is very destructive to them. There must also be great Attention to the admitting fresh Air at all proper Times, as also to be careful in keeping the Bed to a proper Temperature of Heat, for as there is a Want of Fire to warm the Air, so that must be supplied by the Heat of Dung, afterward these Plants must be ridged out, in the same Manner as before directed.

If the Bed is of a good Temper for Heat, your Plants will take Root in less than 24 Hours; after which Time you must be careful to let in a little Air, at such Times when the Weather will permit, and also to turn the Glasses upside down every Day to dry; for the Steam of the Bed, condensing on the Glasses, will fall down upon the Plants, and be very injurious to them; and therefore whenever the Weather is so bad as not to permit the Glasses to lie turned long, you should at least turn them once or twice a Day, and wipe off the Moisture with a woollen Cloth; but you must also be very careful how you let in too much cold Air, which is equally destructive to the tender Plants; therefore, to avoid this, it is a very good Method to fasten before the upper Side of the Frame, where the Air is suffered to enter the Bed, a Piece of coarse Cloth, or a Mat, so that the Air which enters may pass through that, which will render it less injurious to your Plants.

You must also be very cautious in giving Water to the Plants while young; and whenever this is done, it should be sparingly, and the Water should be placed either into a Heap of Dung, or in some other warm Place, for some Time before it is used, so as to be nearly of a Temperature for Warmth with the inclosed Air of the hot Bed; and as the Plants advance in Height,

you should have a little dry sifted Earth always ready, to earth up their Shanks, which will greatly strengthen them. You must also be very careful to keep up the Heat of the Bed; which, if you should find decline, you must lay a little fresh Litter round about the Sides of it and keep the Glasses well covered in the Nights, or in bad Weather; but if, on the other Hand, your Bed should prove too hot, you should thrust a large Stake into the Side of the Dung in 2 or 3 Places, almost to the Middle of the Bed, which will make large Holes, through which the greatest Part of the Steam will pass off without ascending to the Top of the Bed; and when you find it has answered your Purpose by slackening the Heat of your Bed, you must stop them up again with Dung.

These Directions, if carefully attended to, will be sufficient for raising the Plants in the first Bed; you must therefore, when you perceive the third, or rough Leaf begin to appear, prepare another Heap of fresh Dung, which should be mixed with Ashes, as before directed; this should be in Quantity according to the Number of Holes you intend to make. The common Allowance for ridging out the earliest Plants is, one Load to each Light, or Hole, so that the Bed will be near 3 Feet thick in Dung, but for such as are not ridged out till *March*, 2 Loads of Dung will be sufficient for 3 Holes, for I could never observe any Advantage in making these Beds so thick with Dung as some People do; their Crops are seldom better, if so good, as those which are of a moderate Substance; nor are they forwarder, and the Fruit is rarely so fair, nor do the Vines continue so long in Health.

In making these Beds, you must carefully mix the Dung, shaking it well with the Fork, so as not to leave any Clods unseparated, as also to beat it down pretty close, to prevent the Steam from rising too hastily; you must also be careful to lay it very even, and to beat, or press down the Dung equally in every Part of the Bed, otherwise it will settle in Holes, which will be very hurtful. When you finish laying the Dung, you must make a Hole exactly in the Middle of each Light, about a Foot deep, and 8 or 9 Inches over; these Holes must be filled with light fresh Earth, which should be screened to take out all large Stones, Clods, &c. laying it up in an Hill; and in the Middle of each, thrust in a Stick about 18 Inches long, which should stand as a Mark to find the exact Place where the Hole is; then earth the Bed all over about 3 Inches thick, leveling it smooth, and afterwards set the Frame upon it, covering it with Glasses; but if there is any Apprehension of the Dung heating too violently, the Earth should not be laid upon the Bed until the Heat is somewhat abated, which will be in a few Days, and then the Earth may be laid upon the Bed by Degrees, covering it at first one Inch thick, and a Week or 10 Days after another Inch in Thickness may be laid on, but there should be the whole Thickness of Earth laid upon the Bed before the Vines begin to run; and if this Thickness of Earth is at last 5 or 6 Inches, the Vines will grow the stronger for being so thick; for if the Roots are observed, they will be found to spread and cover the whole Bed as much as the Vines extend; and when the Earth is very shallow, or too light, the Vines will hang their Leaves every Day,

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Day, for Want of a sufficient Depth of Earth to support their Roots; so that if they are not constantly, and well watered, they will not have Strength to last long, nor to produce fair Fruit, and the giving them too much Water is not so proper, nor will it answer near so well, as the giving a Depth of Earth upon the Dung.

In 4 or 5 Days Time your Bed will be in fit Order to receive your Plants, of which you may easily judge by pulling out one of the Sticks which was put in the Middle of the Holes, and feeling the lower Part of it, which will satisfy you what Condition your Bed is in; then you must stir up the Earth in the Middle of the Hole with your Hand, breaking all Clods, and removing all large Stones, making the Earth hollow in form of a Bason; into each of these Holes you must plant 4 Plants, in doing which, observe to make the Holes for the Plants a little slanting towards the Middle of the Bason, especially if your Plants are long shanked; this is intended to place the Roots of the Plants as far as possible from the Dung, to which if they approach too near, the lower Part of their Roots is subject to be burned off; then settle the Earth gently to each Plant, and, if the Earth is dry, it will be proper to give them a little Water (which should be warmed to the Temper of the Bed, as before directed); and if the Sun should appear in the Middle of the Day, they should be shaded with Mats until the Plants have taken Root, which will be in 2 or 3 Days; after which, you must let them enjoy as much of the Sun as possible, observing to turn the Lights in the Day Time to dry, as also to give a little Air whenever the Weather will permit.

You must also observe to keep the Glasses covered every Night, and in bad Weather, but be very careful not to keep them covered too close, especially while the Bed has a great Steam in it, which will cause a Damp to settle upon the Plants, which, for want of Air to keep the Fluid in Motion, will stagnate and rot them.

When your Plants are grown 4 or 5 Inches high, you must, with some slender forked Sticks, incline them toward the Earth, each one a separate Way; but this must be done gently at first, lest by forcing them too much, you should strain or break the tender Vessels, which would be very hurtful to them. In this Manner, you should, from Time to Time, observe to peg down the Runers as they are produced, laying each in exact Order, so as not to interfere or cross each other; nor should you ever after remove them from their Places, or handle them too roughly, whereby the Leaves may be broken or displaced, which is also equally injurious to them; but whenever you have Occasion to weed the Bed between the Plants, do it with great Care, holding the Leaves aside with one Hand, while with the other you pull out the Weeds.

In about a Month after they are ridged out, you may expect to see the Beginnings of Fruit; these very often are preceded by male Flowers, which many People are so ignorant as to pull off, calling them false Blossoms, but this I am fully convinced, by the many Experiments, is wrong; for these Flowers are of absolute Service to promote the Welfare of the Fruit, which, when these male Flowers are entirely taken off, very often falls away, and comes to nothing; nor should the Vines be

pruned, as is too often the Practice of unskilful People, especially when they are too luxuriant, which often happens when the Seeds were fresh, or of the last Year's sowing, and the Plants in good Heart. If this should happen to be the Case, it would be very proper to pull up one or two of the Plants, before they have run so far as to entangle with the others; for it often happens, that 2 or 3 Plants are better than 4 or 5, when they are vigorous; for when the Frame is too much crowded with Vines, the Fruit is seldom good, nor in such Plenty, as when there is a moderate Quantity of Shoots; for the Air being hereby excluded from the Fruit, they often spot and decay, or fall off very young.

You must also be very careful to cover the Glasses every Night when your Fruit begins to appear, also to lay a little fresh Litter, or Mowing of Grass round the Sides of the Bed, to add a fresh Heat thereto; for if the Heat of the Bed be spent, and the Nights prove cold, the Fruit will fall away, and come to nothing; and when the Sun is extreme hot, in the Middle of the Day, you must cover the Glasses with Mats to shade the Vines; for although they delight in Heat, yet the direct Rays of the Sun, when it has great Force, are very injurious, by either scorching those Leaves which are near the Glasses, or by causing too great a Perspiration, whereby the extreme Parts of the Shoots and the large Leaves, are left destitute of Nourishment, and Fruit will be at a Stand, and often turn yellow before it arrives at half its Growth.

At this Time, when your Vines are spread, so as to cover the hot Bed, it will be of great Service, when you water them, to sprinkle them all over gently so as not to hurt the Leaves, but observe to do this not at a Time when the Sun is very hot, for hereby I have known a whole Bed of Cucumbers spoiled; for the Water remaining upon the Surface of the Leaves in Drops, doth collect the Rays of the Sun as it were to a Focus, and so scorches them, that in one Day's Time they have, from a bright green, become the Colour of brown Paper. The Watering of the Beds all over will be of great Service, by giving Nourishment to those Roots, which by this Time will have extended themselves all over the Bed; and if the Warmth of the Bed should now decline, it will be of great Service to add a Lining of fresh Dung round the Sides of the Beds, to give a new Heat to them; for as the Nights are often cold at this Season, where the Beds have not a kindly Warmth left in them, the Fruit will frequently drop off the Vines, when grown to the Size of a little Finger; and if upon this Lining of Dung there is a Thickness of strong Earth laid for the Roots of the Plants to run into, it will greatly strengthen them, and continue the Plants in Vigour a much longer Time than they otherwise will do; for the Roots of these Plants extend to a great Distance when they have Room, which they cannot have in a Bed not more than 5 Feet wide; so that when they have no greater Extent for their Roots, the Plants will not continue in Vigour above 5 or 6 Weeks, which, if they have a Depth and Extent of Earth, will continue 3 Months in bearing, so where there are several Beds made near each other, it will be the best Way to fill up the Bottom of the Alleys between them with warm Dung, and cover that with a proper Thickness of Earth, so as to raise them to the Level of the Beds.

These

These Directions, with diligent Observation, will be sufficient for the Management of this Crop of Cucumbers; and Vines thus treated will continue to supply you with Fruit till the Beginning of *July*, by which Time the second Crop will come to bear; the sowing and managing of which is what I shall next proceed to.

About the Middle of *March*, or a little later, according to the Earliness of the Season, you must put in your Seeds, either under a Bell Glass, or in the upper Side of your early hot Bed; and when the Plants are come up, they should be pricked upon another moderate hot Bed, which should be covered with Bell or Hand Glasses, placed as close as possible to each other; the Plants should also be pricked at about 2 Inches Distance from each other, observing to water and shade them until they have taken Root, which will be in a very short Time. This is to be understood of such Places where a great Quantity of Plants are required, which is constantly the Case in the Kitchen Gardens near *London*; but where it is only for the Supply of a Family, there may be Plants enough raised on the upper Side of the Beds where the first Crop is growing; or if the Vines should have extended themselves so far as to cover the whole Bed, whereby there will not be Room to prick the Plants, a single Light will contain a sufficient Number of Plants, while young, to plant out in Ridges, as will supply the largest Family with Cucumbers during the latter Season. You must also cover the Glasses with Mats every Night, or in very bad Weather; but in the Day Time, when the Weather is hot, you must raise the Glasses with a Stone on the opposite Side from the Wind, to give Air to the Plants, which will greatly strengthen them; you must also water them as you shall find they require it, but this must be done sparingly while the Plants are young.

The Middle of *April* the Plants will be strong enough to ridge out, you must therefore be provided with a Heap of new Dung, in Proportion to the Quantity of Holes you intend to plant, allowing one Load to six Holes. When your Dung is fit for Use, you must dig a Trench about 2 Feet 4 Inches wide, and in Length just as you please, or the Place will allow; and if the Soil be dry, it should be 10 Inches deep, but if wet, very little in the Ground, leveling the Earth in the Bottom; then put in your Dung, observing to stir and mix every Part of it as directed for the first hot Beds, laying it close and even.

When this is done, you must make Holes about 8 Inches over, and 6 Inches deep, just in the Middle of the Ridge, and 3 Feet and a Half Distance from each other; and if there be more than one Ridge, the Distance of those ought to be 8 Feet and a Half from each other; then fill the Holes with good light Earth, putting a Stick into the Middle of each for a Mark, and afterwards cover the Ridge over with Earth about 4 Inches thick, laying the Earth the same Thickness round the Sides. When the Earth is leveled smooth, you must set the Glasses on the Holes, leaving them close down about 24 Hours, in which Time the Earth in the Holes will be warmed sufficiently to receive the Plants; then with your Hand stir up the Earth in the Holes, making it hollow in form of a Basin; into each of which you should plant 4 Plants, observing to water and shade them until they have taken

Root, after which Time you must be careful to give them a little Air by raising the Glasses on the opposite Side to the Wind, in Proportion to the Heat of the Weather, as also to water them as you shall see they require it; but you must only raise the Glasses in the Middle of the Day, until the Plants fill the Glasses, at which Time you should raise the Glasses with a forked Stick on the South Side in Height proportionable to the Growth of the Plants, that they may not be scorched by the Sun; this also will harden and prepare the Plants to endure the open Air, but you should not expose them too soon thereto, for it often happens, that there are Morning Frosts in *May*, which are many Times destructive to these Plants when exposed thereto; it is therefore the surest Method to preserve them under the Glasses as long as they can be kept in without Prejudice to the Plants; and if the Glasses are raised with two Bricks on the Backside, and the forked Stick on the other Side, they may be kept in a great while without Danger.

Towards the latter End of *May*, when the Weather appears settled and warm, you should turn your Plants down gently out of the Glass, but do not perform this in a very dry hot sunny Day, but rather when there is a cloudy Sky, and an Appearance of Rain; you must in doing this raise the Glasses either upon Bricks, or forked Sticks, whereby they may stand secure at about 4 or 5 Inches high from the Ground, that the Plants may lie under them without bruising; nor should you take the Glasses quite away till the latter End of *June*, or the Beginning of *July*, for these will preserve the Moisture much longer to their Roots than if they were quite exposed to the open Air; about 3 Weeks after you have turned the Plants out of the Glasses, they will have made a considerable Progress especially if the Weather has been favourable, at which Time you should dig up the Spaces of Ground between the Ridges, laying it very even; then lay out the Runners of the Vines in exact Order, and be careful in this Work not to disturb the Vines too much, nor to bruise or break the Leaves; this Digging of the Ground will loosen it, and thereby render it easy for the Roots of the Plants to strike into it, as also render the Surface of the Earth more agreeable to the Vines that run upon it. After this there will be no farther Care needful, but only to keep them clear from Weeds, and to water them as often as they require, which they will soon shew, by the hanging of their greater Leaves. The Ridges, thus managed, will continue to produce large Quantities of Fruit from *June* until the latter End of *August*, after which Time the Coldness of the Season renders them unwholesome, especially if the Autumn proves wet.

From these Ridges People commonly preserve their Cucumbers for Seed, by making Choice of 2 or 3 of the fairest Fruit upon each Hole, never leaving above one upon a Plant, and that situated near the Root of it; for if you leave more, they will weaken the Plant so much, that your other Fruit will be small, and fewer in Number: But those Persons who value themselves upon producing Cucumbers very early, commonly leave 3 or 4 Cucumbers of the first Produce of their earliest Crop, when the Fruit is fair; and the Seeds of these early Fruit are generally preferred to any other for the first Crop.

Crop. These should remain upon the Vines until the End of *August*, that the Seeds may be perfectly ripe; and when you gather them from the Vines, it will be proper to set the Fruit in a Row upright against a Hedge or Wall, where they may remain until the outer Cover begins to decay; at which Time you should cut them open, and scrape out the Seeds, together with the Pulp, into a Tub, which should be afterwards covered with a Board, to prevent Filth from getting amongst the Pulp. In this Tub it should be suffered to remain 8 or 10 Days, observing to stir it well with a long Stick to the Bottom every Day, in order to rot the Pulp, that it may be easily separated from the Seeds; then pour some Water into the Tub, stirring it well about, which will raise the Scum to the Top, but the Seeds will settle to the Bottom; so that by 2 or 3 Times pouring in Water, and afterwards straining it off from the Seeds, they will be perfectly cleared from the Pulp; then you should spread the Seeds upon a Mat, which should be exposed to the open Air 3 or 4 Days, until they are perfectly dry, when they may be put in Bags, and hung up in a dry Place, where Vermin cannot come to them, where they will keep good for several Years, but are generally preferred when 3 or 4 Years old, being apt to produce less vigorous, but more fruitful Plants.

I shall, in the next Place, proceed to give Directions for managing Cucumbers for the last Crop, or what are generally called Picklers.

The Season for sowing these is towards the latter End of *May*, when the Weather is settled. The Ground where these are commonly sown, is between Cauliflowers, in wide Rows, between which are allowed 4 Feet and a Half Space when the Cauliflowers were planted. In these Rows you should dig up square Holes at about 3 Feet and a Half Distance from each other, breaking the Earth well with a Spade, and afterwards smoothing and hollowing it in the Form of a Basin with your Hand; then put 8 or 9 Seeds in the Middle of each Hole, covering them over with Earth about half an Inch thick; and if it should be very dry Weather, it will be proper to water the Holes gently in a Day or two after the Seeds are sown, to facilitate their Germination.

In five or six Days, if the Weather be good, your Plants will begin to thrust their Heads above Ground; at which Time you should be very careful to keep off the Sparrows, which are very fond of the young tender Heads; and, if not prevented, will destroy your whole Crop: But as it is not above a Week that the Plants are in Danger, it will be no great Trouble to look after them during that Time; for when the Plants are come up, and have expanded their Seed Leaves, the Sparrows will not meddle with them.

You must also be careful to water them gently, as you find the Drought of the Season may require; and when you perceive the third or rough Leaf of the Plants begin to appear, you must pull out all the weakest Plants, leaving only four of the most promising and best situated in each Hole, stirring the Earth round about them with a small Hoe to destroy the Weeds, and raise the Earth about the Shanks of the Plants, putting a little Earth between them, pressing it gently down with your Hand, that the Plants may be thereby separated from each

other to a greater Distance; then give them a little Water (if the Weather be dry) to settle the Earth about them, which you must afterwards repeat as often as you shall find it necessary, still being careful to keep the Ground clear from Weeds.

When your Cauliflowers are quite drawn off the Ground from between the Cucumbers, you must hoe and clean the Ground, drawing the Earth up round each Hole in Form of a Basin, the better to contain the Water when it is given them; you must also lay out the Plants in exact Order as they are to run and extend, so that they may not interfere with each other; then lay a little Earth between the Plants left, pressing it down gently with your Hand, the better to spread them each Way, giving them a little Water to settle the Earth about them, repeating it as often as the Season shall require, and observing to keep the Ground clean from Weeds. The Plants, thus managed, will begin to produce Fruit toward the latter End of *July*, when you may either gather them young for pickling, or suffer them to grow for large Fruit.

The Quantity of Holes necessary for a Family, is about 50 or 60; for if you have fewer, they will not produce enough at one gathering to make it worth the Trouble and Expence of Pickling, without keeping them too long in the House, for you cannot expect to gather more than 200 at each Time from fifty Holes; but this may be done twice a Week during the whole Season, which commonly lasts five Weeks; so that from fifty Holes you may reasonably expect to gather about 2000 in the Season, which, if they are taken small, will not be too many for a private Family. And if so many are not wanted, they may be left to grow to a proper Size for eating.

CUCUMIS AGRESTIS. See Momordica.

CUCURBITA. *Lin. Gen. Plant.* 968. *Tourn. Infl. R. H.* 107. the Gourd, in *French Calibasse*.

The Characters are,

It hath male and female Flowers in the same Plant. The Flowers have a Bell-shaped Empalement of one Leaf, whose Borders are terminated by 5 Bristles; the Flowers are Bell-shaped, adhering to the Empalement, and are of one Petal, which is veined and rough, divided at the Top into 5 Parts. The male Flowers have 3 Stamina, connected at their Extremity, but are distinct at their Base, where they adhere to the Empalement; these are terminated by linear Summits running up and down. The female Flowers have a large Germen, situated under the Flower, supporting a conical trifid Style, crowned by a large trifid Stigma. The Germen becomes a large fleshy Fruit, having 3 soft membranaceous Cells which are distinct, inclosing 2 Rows of Seeds which are bordered.

1. CUCURBITA foliis subangulatis tomentosis, basi subtus biglandulosis, pomis lignosis. *Lin. Sp. Plant.* 1010. Gourd with angular woolly Leaves, having a glandulous Base, and a hard Shell to the Fruit. This is the *Cucurbita longa folio molli, flore albo*. *J. R.* 2. 221. Long Gourd with a soft Leaf and white Flower, commonly called the Long Gourd.

2. CUCURBITA foliis lobatis, pomis laevibus. *Lin. Sp. Plant.* 1010. Gourd with lobed Leaves and a smooth Fruit. This is the *Cucurbita major rotunda, flore luteo, folio aspero*. *C. B. P.* 213. Greater round Gourd, with a yellow

a yellow Flower and rough Leaf commonly called Pom-pion or Pumkin.

3. *CUCURBITA foliis lobatis, pomis nodoso-verrucosis.* Lin. Sp. Plant. 1010. Gourd with lobed Leaves, and a warted knobby Fruit. This is the *Cucurbita verrucosa*. J. B. 2. 222. Warted Gourd.

4. *CUCURBITA foliis lobatis, caule erecto, pomis depresso-nodosis.* Lin. Sp. Plant. 1010. Gourd with lobed Leaves, an erect Stalk, and a depressed knotty Fruit. This is the *Melopepo clypeiformis*. C. B. P. 312. *Melopepo* having a Shield-shaped Fruit, commonly called Squash.

5. *CUCURBITA foliis lobatis asperis, flore luteo, pomis tigrosiss.* Gourd with rough lobed Leaves, a yellow Flower, and Fruit having a hard Shell, commonly called Calabash.

The 1st Sort is propagated in the *English* Gardens by Way of Curiosity, but the Fruit is very rarely eaten here; though, if they are gathered when young, while their Skins are tender, and boiled, they have an agreeable Flavour. In the Eastern Countries they are very commonly cultivated and sold in the Markets for the Table, and are a great Part of the Food of the common People, from June to October. They are also eaten in both the *Indies*, where the Plants are cultivated, as culinary; and in those Countries, where the Heat of their Summers is too great for many of our common Vegetables, these may be a very good Substitute.

This Sort doth not vary like most of the others, but always produces the same shaped Fruit; the Plants extend to a great Length, if the Season proves warm and favourable, and will then produce ripe Fruit; but in cold Summers, the Fruit seldom grows to half its usual Size; I have measured some of them when growing, which were 6 Feet long, and a Foot and Half round; the Plants were near 20 Feet in Length: The Stalks and Leaves are covered with fine soft hairy Down; the Flowers are large, white, and stand on long Foot Stalks, being reflexed at their Brim; the Fruit is generally incurved and crooked, and when ripe, is of a pale yellow Colour. The Rind becomes hard, so that if the Seeds and Pulp are taken out, and the Shell dried, it will contain Water; and in those Countries where they are much cultivated, are used for many Purposes.

The 2d Sort, which is commonly known by the Title of Pumpkin, is frequently cultivated by the Country People in *England*, who plant them on their Dunghills, where the Plants run over them, and spread to a great Distance; when the Seasons are favourable, they will produce plenty of large Fruit; these they usually suffer to grow to Maturity, then they cut open a Hole on one Side, and take the Seeds out of the Pulp as clean as possible, after which they fill the Shell with Apples sliced, which they mix with the Pulp of the Fruit, and some add a little Sugar and Spice to it; then bake it in an Oven, and eat it as baked Apples; but this is a strong Food, and only fit for those who labour hard, and can easily digest it.

These may be propagated by sowing their Seeds in April, on a hot Bed; and when the Plants come up, they should be transplanted on another moderate Bed, where they should be brought up hardily, and have a great deal of Air to strengthen them; and when they have 4 or 5 Leaves, should be transplanted into Holes

made on an old Dunghill, or some such Place, allowing them a great deal of Room to run, for some of the Sorts will spread to a great Distance. I have measured a single Plant, which had run upwards of 40 Feet from the Hole, and produced a great Number of Side Branches; so that if the Plant had been encouraged, and all the Side Branches permitted to remain, I dare say it would have fairly overspread 20 Rods of Ground; which, to some People, may seem like a Romance, yet I can affirm it to be Fact. But what is this to the Account printed in the *Transactions of the Royal Society*, communicated to them by Paul Dudley, Esq; from *New-England*, wherein Mention is made of a single Plant of this Kind, which, without any Culture, spread over a large Spot of Ground, and from which Plant were gathered 260 Fruits each, one with another, as big as a half Peck.

There are several Varieties of this Fruit, which differ in Form and Size; but as these annually vary from Seeds, I have omitted mentioning them, for they seldom continue to produce the same Kinds of Fruit three Years together.

The 3d Sort is very common in most Parts of *America*, where it is cultivated as a culinary Fruit; of this Sort there are also several Varieties, which differ in Form and Size; some of these are flat, others round; some are shaped like a Bottle, and others are oblong, their outer Cover or Rind being white when ripe, and covered with large Protuberances or Warts. The Fruit are commonly gathered when they are half grown, and boiled by the Inhabitants of *America* to eat as a Sauce with their Meat; but in *England* they are only cultivated for Curiosity, few Persons having a Relish for them here, where they have a great Variety of better esculent Plants at the Season, when these are fit for Use. These may be propagated as the 2d Sort.

The 4th Sort is also very common in *North America*, where it is cultivated for the same Purposes as the third. This very often grows with a strong bushy erect Stalk, without putting out Runners from the Side, as the other Sorts, but frequently varies; for after it has been cultivated a few Years in the same Garden, the Plants will become trailing like the others, and extend their Branches to as great Distance; and yet I have known when Part of the Seeds, taken out from the same Fruit has been sown in another Garden, at a considerable Distance, the Fruit have been the same, and the Plants have grown erect, when those which were sown in the same Garden, have produced trailing Plants with larger Fruit of a different Shape.

The Fruit of the 5th Sort, hath a hard Shell when ripe like the 1st, which may be dried and preserved many Years: These are of very different Forms and Size; some are shaped like a Pear, and are no bigger than a large *Catherine Pear*; some are as large as Quart Bottles, and almost of the same Form; others are round, shaped like an Orange, and of the same Size and Colour, but these are very variable; for I have cultivated most of the Sorts near 40 Years, and have not been able with all possible Care to preserve the Varieties longer than 2 or 3 Years in the same Garden, without procuring fresh Seeds from some distant Place. Whether these Changes are brought about by the Admixture of the Farina with each other, or from what Cause I cannot say, because I have frequently

frequently planted them at as great Distance from each other as I possibly could in the same Garden, and yet the Effect has been the same as when near.

The 1st Sort requires to be treated more tenderly than the others, in order to procure ripe Fruit, so the Seeds should be sown upon a moderate hot Bed in April, and the Plants afterward planted each into a Penny Pot, and plunged into a very moderate hot Bed to bring them forward; but they must not be tenderly treated, for if they have not a large Share of free Air admitted every Day, they will draw up weak. When the Plants are grown too large to be continued in the Pots, there should be Holes dug where they are designed to grow, and 3 or 4 Barrows of hot Dung put into each; these should be covered with Earth, into which they must be planted, and covered with Hand Glasses till they run out.

There are some who plant them by the Sides of Arbours, over which they train the Vines; so that in a short Time they will cover the whole Arbour, and afford a strong Shade, and upon some of these Arbours I have seen the longest Fruit. There are others, who plant them near Walls, Pales, or Hedges, to which they fasten the Vines, and train them to a great Height: The Orange-shaped Gourd is the Sort which is most commonly so planted for the Ornament of its Fruit, this has a pretty Effect, when seen at some Distance. These Plants all require a large Supply of Water in dry Weather.

These Plants requiring so much Room to spread, and their Fruit being little valued in England, hath occasioned their not being cultivated amongst us; we having so many Plants, Roots, or Fruits, greatly preferable to those for Kitchen Uses: But in some Parts of America, where Provisions are not in so great Plenty, or so great Variety, these may be very acceptable.

CUIETE. See Crescentia.

CULMIFEROUS PLANTS are such as have a smooth jointed Stalk, and usually hollow, and at each Joint wrapped about with single, narrow, sharp pointed Leaves; and their Seeds are contained in chaffy Husks, as Wheat, Barley, &c.

CUMINOIDES. See Lagoecia.

CUMINUM. Lin. Gen. Pl. 313. Cumin.

The Characters are,

It hath an umbelliferous Flower; the general Umbel is composed of smaller, divided into 4 Parts, their Involucrum is longer than the Umbel. The great Umbel is uniform, the Flowers have 5 unequal Petals, whose Borders are inflexed, and 5 single Stamina, terminated by slender Summits. It hath a large Germen situated under the Flower, supporting 2 small Styles, crowned by single Stigmas. The Germen becomes an oval striated Fruit, composed of 2 oval Seeds, convex and furrowed on one Side, and plain on the other.

We have but one Species of this Genus,

CUMINUM. Lin. Mat. Med. Cumin. *Cuminum semine longiore*. C. B. P. Cumin with a longer Seed.

This Plant is annual, perishing soon after the Seeds are ripe; it seldom rises more than 9 or 10 Inches, in the warm Countries where it is cultivated; but I have never seen it grow more than 3 or 4 Inches high in England, where I have had the Plants come so far as to flower very well, but never to produce Seeds. The Leaves are divided into long narrow Parts, like those of Fennel, but much smaller; they are of a deep green, and gene-

rally turn backward at their Extremity; the Flowers grow in small Umbels at the Top of the Stalks; these are composed of 5 unequal Petals, of a pale bluish Colour, and are succeeded by long channeled aromatick Seeds.

The Seeds of this Plant is the only Part used in Medicine; these are ranged among the greater hot Seeds; they consist of very warm dissolving Parts, and are esteemed good to expel Wind from the Stomach and Bowels, so are frequently put into Clysters, and sometimes given in Powder; outwardly applied, they are of great Service to ease Pains of the Breast or Side.

This Plant is propagated for Sale in the Island of Malta, where it is called *Cumino aigro*, i. e. hot Cumin. But Anise, which they also propagate in no less Quantity, they call *Cumino dulce*, i. e. sweet Cumin. So that many of the old Botanists were mistaken, when they made two Species of Cumin, viz. *acre* and *dulce*.

If the Seeds are sown in small Pots filled with light Kitchen Garden Earth, and plunged into a very moderate hot Bed to bring up the Plants, and these after having been gradually inured to the open Air, turned out of the Pots, and planted in a warm Border of good Earth, preserving the Balls of Earth to their Roots, and afterward kept clean from Weeds; the Plants will flower pretty well, and by thus bringing them forward in Spring, they may perfect their Seeds in warm Seasons.

CUNILA. See Sideritis.

CUNONIA. Buttn. *Cun. Antibolyza*. Lin. Gen. Pl.

The Characters are,

The Flowers grow alternate in an imbricated Spike, each having a Spatha or Sheath, composed of two Spear-shaped concave Leaves; the Flower hath one ringent Petal, having a short slender Tube, which is dilated at the Chaps and compressed on the Sides; the upper Lip is arched, and stretched out a considerable Length beyond the Ala or Wings, and is rounded at the Top: It hath 3 long slender Stamina, situated in the upper Lip, terminated by oblong flat Summits, which are fastened in their Middle and lie prostrate. It hath a slender Style, which is shorter than the Stamina, crowned by 3 cylindrical Stigmas, which join the Summits, and are included in the upper Lip. The Germen, which is situated below the Flower, becomes an oblong Capsule with 3 Cells, filled with compressed Seeds.

We have but one Species of this Genus at present in the English Gardens, which is

CUNONIA floribus sessilibus, spatibus maximis. Buttn. *Cun. 211. Tab. 1. Cunonia* with Flowers fitting close to the Stalk, and very large Spathæ or Sheaths. Dr. Linnaeus titles it *Antibolyza staminibus omnibus ascendentibus*. Sp. Plant. 37. *Antibolyza* with all the Stamina ascending.

The Seeds of this Plant I received from the Cape of Good Hope, where it grows naturally, which succeeded so well in the Chelsea Garden, as to produce a great Number of Plants, which flowered well the third Season after they appeared, and have continued to produce Flowers, and perfect their Seeds every Year since.

This hath a compressed bulbous Root, somewhat like that of Corn Flag, covered with a brown Skin; from this arise several narrow Sword-shaped Leaves, about nine Inches long, and a Quarter of an Inch broad in the Middle, terminating in acute Points; these have one longitudinal Midrib which is prominent, and

tudinal Veins running parallel on each Side; they are of a Sea-green Colour, and appear in Autumn, growing in Length all the Winter; in Spring the Stalk arises from between the Leaves, which is round, strong, and jointed; at each Joint is situated a single Leaf, which almost embraces the Stalk for near three Inches from the Base, then by the Curvature of the Stalk it is separated, standing erect: The Stalks rise near a Foot and a Half high, which is generally curved two opposite Ways; the upper Part of the Stalk is terminated by a loose Spike of Flowers, coming out of large Spathæ or Sheaths composed of two oblong concave Leaves, terminating in acute Points: These are at their first Appearance placed *imbricatim* over each other, but as the Stalk increases in Length, so these are separated; from between these two Leaves come out the Flower, each having a slender Saffron coloured Tube near half an Inch long, which is then enlarged where the Petal is divided, and the upper Segment is extended two Inches in Length, being arched over the Stamina and Style. This is narrow as far as to the Extent of the Wings, but above them is enlarged and spread open, half an Inch in Length, and is concave, covering the Summits and Stigmas which are extended to that Length; the two Wings are also narrow at their Base, but are enlarged upward in the same Manner, ending in concave obtuse Points, which are compressed together, and cover the Stamina and Style. This Flower is of a beautiful soft scarlet Colour, so makes a fine Appearance, about the End of April or Beginning of May, which is the Season of its flowering. After the Flowers decay, the Germen becomes an oval smooth Capsule opening in 3 Cells, filled with flat bordered Seeds.

This Plant is too tender to thrive in the open Air in England, so the Roots must be planted in Pots filled with light Earth, and may remain in the open Air till October, when they must be removed into Shelter, either into a Green-house, or an airy Glass Case, where the Leaves will keep growing all Winter, and in Spring the Stalks arise and flower. During the Winter Season, the Plants will require a little Water once a Week, but not in great Quantities, especially in cold Weather; in Spring they should be watered oftener; and when the Flowers are past, the Pots should be removed into the open Air to perfect Seeds, which will ripen the latter End of June, soon after which the Stalks decay to the Root, and remain inactive till September. When the Stalks are decayed, the Roots may be taken out of the Ground, and kept in a dry Room till the End of August, when they should be planted again.

This Plant is easily propagated by Offsets, which it sends out in great Plenty, or by sowing the Seeds, which should be sown in Pots about the Middle of August, and placed in a Situation where they may enjoy the Morning Sun, and in dry Weather should be gently watered; in September the Pots may be removed to a warmer Situation, and in October they must be placed under a Frame, to protect them from Frost and hard Rains, but in mild Weather they must enjoy the free Air. These Plants will appear in October, and continue growing all the Winter, and in June their Leaves will decay; then they may be taken up, and 4 or 5 Roots may be planted in a small Pot, till they have grown another Year, when they may be each put into a separate Pot. These Seed-

ling Plants must be sheltered as the old Roots in Winter, and the third Year they will flower.

CUPRESSUS. *Lin. Gen. Plant.* 958. *Tourn. Infl.* The Cypress Tree; in French, *Cypres*.

The Characters are,

It hath male and female Flowers growing at Distances on the same Plant; the male Flowers are formed into oval Katkins, in which the Flowers are placed thinly, there being several roundish Scales, each having a single Flower. These have no Petals nor Stamina, but have 4 Summits adbering to the Bottom of the Scales. The female Flowers are formed in a roundish Cone, each containing 8 or 10 Flowers; the Scales of the Cones are opposite, each having a single Flower, these have no Petals; the Germen is scarce visible, but under each Scale there are many Punctures or Spots, and a concave truncated Apex instead of a Style; this becomes a globular Cone, opening in angular Target-shaped Scales, under which are situated angular Seeds.

The Species are,

1. CUPRESSUS *foliis imbricatis, ramis erectioribus*. Cypress with imbricated Leaves, and upright Branches. This is the *Cupressus metâ in fastigium convolutâ qua famina. Plinii. Dod.* Female or common upright Cypress.

2. CUPRESSUS *foliis imbricatis acutis, ramis horizontalibus*. Cypress with imbricated, acute Leaves, and Branches growing horizontally. This is the *Cupressus ramos extra se spargens qua Mas.* Male spreading Cypress.

3. CUPRESSUS *foliis imbricatis, apicibus aculeatis, ramis dependentibus*. Cypress with imbricated Leaves, terminating in Spines, and Branches hanging downward. This is the *Cupressus Lusitanica, patula, fructu minore. Tourn.* Portugal spreading Cypress with a smaller Fruit.

4. CUPRESSUS *foliis distichis patentibus*. *Hort. Cliff.* 409. Cypress with Leaves on two Sides the Branches. This is the *Cupressus Virginiana foliis Acaciae deciduis. Hort. Amst.* 1. p. 113. Virginia Cypress which sheds its Leaves, commonly called Deciduous Cypress.

5. CUPRESSUS *foliis imbricatis, frondibus ancipitibus. Lin. Sp. Plant.* 1003. Cypress with imbricated Leaves, and Branches standing two Ways. This is the *Cupressus nana Mariana, fructu caruleo parvo. Pluk. Mant.* 61. Dwarf Maryland Cypress with a small blue Fruit.

6. CUPRESSUS *foliis linearibus simplicibus cruciatim positis*. Cypress with narrow, single Leaves, placed cross ways. This is the *Cupressus Africana* of Herman. African Cypress Tree, called by the Dutch Cypress Boom.

The first of these Trees is very common in old Gardens in England; but at present is not so much in Request as formerly, though it is not without its Advantages; for it serves to add to the Beauty of Wildernesses, or Clumps of Ever-greens, and where properly disposed they have their Beauties. It was formerly planted in Borders of Pleasure Gardens, and kept shorn into a pyramidal or conick Form; and some People, believing them subject to be killed if they cut them, tied them up with Cords into a pyramidal Figure; which Form they are naturally disposed to grow in; but this, prevented the Air from entering the inward Parts of the Branches; so that the Leaves decayed, and became unsightly, and it greatly retarded their Growth. Those which are sheared, if the Operation is not performed in Spring, or early in Summer, are very subject to be injured by sharp Winds,

Winds, and cutting Frosts, in Winter. Wherefore, upon the whole, I think it much better to suffer them to grow wild as they are naturally disposed, planting them only among other ever-green Trees, where, by the Darkeness of their green Leaves, together with their waving Heads, they will greatly add to the Variety.

The 2d Sort is by far the largest growing Tree, and the most common Timber in the *Levant*: This, if planted on a warm sandy gravelly Soil, will prosper wonderfully; and though the Plants are not so finely shaped as the 1st Sort, yet they make amends for that Defect, by their vigorous Growth, and Strength in resisting all Weathers. This Tree is very proper to intermix with Ever-greens of a second Size next to Pines and Firrs, to form Clumps; in which Class it will keep Pace with the Trees of the same Line, and be very handsome. Besides, the Wood is very valuable, when grown to a Size fit for Planks; which I am convinced it will do, in as short a Space as Oaks; therefore, why should not this be cultivated for that Purpose, since there are many Places in *England* where the Soil is of a sandy or gravelly Nature, and seldom produces any Thing worth Cultivating? In such Places these Trees would thrive wonderfully, and greatly add to the Pleasure of the Owner, while growing, and afterwards render as much Profit to his Successors, as perhaps the best Plantation of Oaks; especially should the Timber prove as good here, as in the Islands of the *Archipelago*, which I see no Reason to doubt; for we find it was so gainful a Commodity to the Island of *Candia*, that the Plantations were called *Dos Filia*; the Felling of one of them being reckoned a Daughter's Portion.

The Timber of this Tree is said to resist the Worm, Moth, and all Putrefaction, and to last many hundred Years. The Doors of *St. Peter's Church* at *Rome* were framed of this Material, which lasted from the great *Constantine* to *Pope Eugenius IVth's* Time, which was 1100 Years, and were then found entire, when the Pope changed them for Gates of Brass. The Coffins were made of this Wood, in which *Thucydides* tells us the *Athenians* used to bury their Heroes; and the Mummy Chests, brought with those conditied Bodies out of *Egypt*, are many of them of this Material.

This Tree is by many learned Authors recommended for the Improvement of the Air, and a Specific for the Lungs, as sending forth great Quantities of aromatic and balsamic Scents; wherefore the antient Physicians of the East used to send their Patients, who were troubled with weak Lungs, to the Island of *Candia*, which abounded with these Trees, where, from the Effects of the Air alone, very few failed of a perfect Cure.

The 4th Sort is a Native of *America*, where it grows in watery Places, and rises to a prodigious Height, and wonderful Bulk: I have been informed, that there are Trees of this Kind in *America* upwards of 70 Feet high, and several Fathoms in Circumference; which Trees grow constantly in the Water; therefore they may probably be of singular Advantage to plant in such swampy or wet Soils, where few other Trees will grow, especially of the resinous Kind. That they are very hardy, in respect to Cold, is evident, from some few Trees of this Kind which were formerly planted in *England*; particularly one in the Gardens of *John Tradescant* at *South*

Lambeth near *Vaux-Hall*, which is upwards of 30 Feet high, and of a considerable Bulk; which, though in a common Yard at present, where no Care is taken of it, but, on the contrary, many Hooks are driven into the Trunk, to fasten Cords thereto for drying of Clothes, yet the Tree is in great Health and Vigour; but hath not produced any Fruit; which may be occasioned for Want of Moisture: For we often see many aquatick Plants will grow upon a drier Soil; but yet are seldom so productive of either Flowers or Fruit, as those which remain growing in the Water.

There is also a pretty large Tree of this Kind, now growing in the Gardens of *Sir Abraham Janssen*, Bart. at *Wimbleton* in *Surry*, which has produced great Quantities of Cones for some Years past, which, in favourable Seasons, come to Maturity; and the Seeds have been as good as those which have been brought from *America*. This Tree was transplanted when it was very large, which has stunted its Growth; this may have occasioned its Fruitfulness; for it has made very little Progress in its Growth since it was removed.

These Trees are all propagated from Seeds, which should be sown early in Spring on a Bed of warm dry sandy Earth, which must be levelled very smooth; then sow the Seeds thereon pretty thick, sifting the same light Earth over them half an Inch thick. If the Weather should prove very warm and dry, it will be proper to water the Bed, which must be done very carefully, observing not to wash the Seeds out of the Ground. In about two Months Time (if your Seeds are good) the young Plants will appear above Ground, which must be constantly kept clean from Weeds, and in very dry Weather should be often refreshed with Water; but this should be done with great Caution, lest you heat these tender rooted Plants out of the Ground.

If the Seeds are sown on a moderate hot Bed, and the Bed covered with Mats, they will come up much sooner, and with greater Certainty, than when they are sown in the cold Ground.

In this Bed the young Plants may remain two Years, by which Time they will have Strength enough to be transplanted into a Nursery, but while the Plants are young, they are tender; so should be covered in severe Frost with Mats to prevent their being injured thereby. The best Season for removing them is in the Beginning of *April*, when the drying Easterly Winds of *March* are over; and, if possible, choose a cloudy Day, when it is inclinable to Rain; and in taking them out of the Seed Bed, preserve the Roots as entire as possible, and, if you can, a Ball of Earth to each Plant. The Soil in which these Trees should be planted (as I before said), should be, for the two first Sorts, a warm Sand or Gravel; which, when you have prepared, by carefully digging and cleansing from all noxious Weeds, you must lay level. Then draw the Lines where the Trees are to be planted at 3 Feet asunder, and plant the Trees at 18 Inches Distance in the Rows, observing to clove the Earth well to their Roots, and lay a little Mulch upon the Surface of the Ground about their Stems; water them well to settle the Earth to their Roots, which should be repeated twice a Week, until they have taken fresh Root.

These Plants may remain in the Nursery 3 or 4 Years,

according to the Progress they make, or till your Ground is ready where they are to be planted: But if you intend to let them remain longer, you should take up every other Tree in the Rows, and transplant them; otherwise their Roots will be intermixed, so as to render it difficult to transplant them, and also endanger the future Growth of the Trees. These Plants should by no Means be let stand too long in the Nursery, before they are transplanted out for good; because the Roots do not mat together so closely as those of many other Sorts of ever-green Trees, whereby they may be taken up with good Balls of Earth to their Roots; but the Roots of the Cypress are apt to extend out in Length; so it is one of the most difficult Trees to remove when grown large; therefore most curious Persons choose to plant the young Plants into small Pots, when they first take them out of the Seed Bed; and so train them up in Pots two or three Years, until they are fit to plant out, where they are to stand for good; and, by this Management, they are secure of all the Plants; these may be shaken out of the Pots at any Time of the Year without Danger, and planted with their whole Ball of Earth, which is likewise a great Advantage. When they are planted out for good (if they are designed for Timber,) the Distance should be about 18 or 20 Feet every Way; and be very careful in removing them, not to shake the Earth from their Roots; to prevent which, you should open the Ground about each Tree, cutting off all long Roots; then working under the Ball of Earth, cut the downright Roots off; and after having pared off all the Earth from the upper Part of the Ball, as also reduced the Bulk of it, so that its Weight may not be too great for the Fibres to support, they may be carried upon a Hand Barrow by two Persons to the Place where they are to be planted; but if they are to be carried to a very distant Place, they should either be put into Baskets, or their Roots closely matted up. When they are planted, you must settle the Earth close to their Roots, as before, laying a little Mulch on the Surface of the Ground about their Stems, to prevent the Sun and Wind from entering the Earth to dry their Fibres; and Water them well, to settle the Ground to their Roots; which must also be repeated (if the Weather be dry) until they have taken Root; after which Time they will require little more Care than to keep them clear from Weeds.

The 1st, which is the most common Sort in *England*, seldom produces good Seeds in this Country; it is therefore the best Way to have the Cones brought over entire from the South of *France* or *Italy*, where they ripen perfectly well, and take the Seeds out just before you sow them; for they will keep much better in the Cones than if they are taken out. The Method to get the Seeds out is to expose the Cones to a gentle Heat, which will cause them to open, and easily emit their Seeds.

The 2d Sort grows naturally in the *Levant*, and from thence it has been formerly brought to *Italy*, but at present is rare in *England*; for what has passed under this Title here, is only a Variety of the common Sort, whose Branches grow much looser, and not so upright as the first; but the Cones taken from these Trees, and the Seeds sown, have frequently produced Plants of both Varieties; the true spreading Cypress extends its Branches horizontally from the first Year, and con-

tinues to extend them to a great Length as the Plants advance, and the Plants raised from the Seeds do not vary; so that it is certainly a distinct Species. This grows to be a large Timber Tree in the *Levant*, and in *Italy* there are some of a considerable Size.

The *Virginian* Kind may also be propagated in great Plenty; for the Cones may be easily procured from *Carolina* or *Virginia*, in both which Places they grow in great Abundance; the Seeds will rise as easily as any of the other Sorts, and the Plants are equally as hardy: these have been formerly kept in Pots, and housed in Winter; with which Management they have not succeeded so well in *England*, as since they have been planted in the full Ground; and where they have had a moist Soil, I have observed them to thrive best; this is since confirmed by Mr. *Catesby*, in his Natural History of *Carolina*; where he says, this Tree grows in Places where the Water commonly covers the Surface of the Ground 3 or 4 Feet; so that it may be a very great Improvement to our boggy Soils. This Tree, casting its Leaves in Winter, does not so well suit with Plantations of Ever-greens at that Season; though, in Summer, when there is the greatest Pleasure in walking among Plantations of Trees, it hath so much the Appearance of an Ever-green, as to pass for such. It may also be propagated by Cuttings, which should be planted in a Bed of moist Earth, in Spring, before they begin to shoot.

The 3d Sort, is at present, rare in *England*, though of late Years there have been several Plants raised in curious Gardens; but this Sort is not quite so hardy, I fear, as the common Cypress, for the Plants are frequently killed or greatly injured in severe Winters; in the hard Frost of 1740, there was a large Tree of this Kind entirely killed in the Gardens of the Duke of *Richmond*, at *Goodwood* in *Sussex*, which had been growing there several Years. There are great Plenty of these Trees at a Place called *Busaco* near *Coimbra* in *Portugal*, where it is called the Cedar of *Busaco*; there it grows to be a Timber Tree; so that from thence the Seeds may be easily procured.

This Tree grows naturally at *Goa*, from whence it was first brought to *Portugal*, where it has succeeded, and been propagated; formerly there were some Trees of this Sort growing in the Bishop of *London*'s Garden at *Fulham*, where it passed under the Title of Cedar of *Goa*, by which Name it was sent to the *Leyden* Garden.

The 5th Sort is a Native of *North America*, where it grows to a considerable Height, and affords an useful Timber to the Inhabitants. This Sort is extremely worth cultivating in *England*; for as it grows in a much colder Country, there is no Danger of its thriving well in the open Air in *England*; and being an Ever-green of regular Growth, will add to the Variety in Wilderness Quarters, or other Plantations of Ever-green Trees.

This Sort is propagated by Seeds, which should be sown in the Spring in Boxes or Tubs filled with light fresh Earth, and placed where they may enjoy the Morning Sun till 11 or 12 o'Clock; in dry Weather they should be duly watered, and constantly kept clear from Weeds. In this Situation they may remain till *Michaelmas*, when they should be removed to a warmer Place; for the Plants seldom appear till the following Spring, so that it will be proper to place the Boxes or Tubs near a South Wall,

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Wall, Pale, or Hedge, during the Winter Season; lest, by being too much shaded, the Wet of the Winter Season should rot the Seeds. In the Spring following, if these Tubs or Boxes are placed on a moderate hot Bed, it will bring up the Plants very soon, and greatly forward their Growth; but as the Spring advances, they should be inured to bear the open Air by degrees; and in May they must be taken out of the hot Bed, and placed in a sheltered Situation, where they may enjoy the Morning Sun, being careful to keep them clear from Weeds, as also to water them duly in dry Weather. The following Winter it will be proper to remove the Tubs near a South Wall or Pale; for the Plants, being very young, are somewhat tenderer than they will be afterward. Toward the latter End of March, or the Beginning of April, just before they begin to shoot, they should be carefully taken up out of the Boxes; and having prepared a Bed or two (according to the Quantity of Plants raised) of fresh Earth in a sheltered Situation, they should be planted therein in Rows about 18 Inches asunder, and about a Foot Distance Plant from Plant in the Rows. This Work should be done in cloudy Weather, when there is Rain; for in dry Weather, when Easterly Winds commonly blow at this Season, it will be very dangerous to transplant them; so that it had better be deferred a Fortnight longer, till there is an Alteration of Weather, than hazard the Plants. When they are planted, they should be watered to settle the Earth to their Roots; and then the Surface of the Ground should be covered with Mulch, to prevent the Sun and Wind from penetrating to their Roots, for nothing is more injurious to these Plants, than to have their Fibres dried when they are transplanted; therefore the Plants should not be taken out of the Tubs, till you are ready to place them in the Ground; for they will not bear to lie out of the Ground any Time without great Danger.

The Branches of this Tree are garnished with flat ever-green Leaves, resembling those of the *Arbor Vita*; and the Cones are no larger than those of the Juniper, from which they are not easily distinguished at a little Distance; but upon closely viewing, they are perfect Cones, having many Cells, like those of the common Cypress. If these Trees are planted in a moist strong Soil, they make great Progress; and may, in such Situations, become profitable for Timber; but however this Tree may succeed for Timber, yet it will be a great Ornament to large Plantations of ever-green Trees, especially in such Places where there is naturally a proper Soil for them; because, in such Situations, there are not many Sorts of ever-green Trees which thrive well, especially in cold Places; and by increasing the Number of Sorts of these Ever-greens, we add to the Beauty of our Gardens and Plantations.

The 3d Sort sends forth its Branches almost horizontally, so that they extend to a great Distance every Way; and the Trees are generally furnished with Branches from the Ground upward; but as these grow without much Order, the Trees have a very different Appearance from all the other Sorts. This grows to be a large Timber Tree in Portugal; but the largest I have seen in England, has not been above 15 Feet high; and the Side Branches of this were extended more than 8

Feet on every Side from the Stem. This Sort may be propagated from Seeds in the same Manner as the common Cypress; and the Plants should be treated as hath been directed for them, with this Difference only, that it will be proper to cover these Plants, during the two first Winters, after they come up, especially if the Frost should be severe, which might destroy them, if exposed to it while they are young. This Sort may also be propagated by Cuttings, which if planted in Autumn, and screened in Winter, will take Root; but it is generally two Years before they will be rooted enough to transplant, nor will the Plants, so raised, thrive so fast as the Seedlings; therefore, when the Seeds can be obtained, that is the best Method to propagate this Tree. The American deciduous Cypress may also be propagated by Cuttings, as I have several Times tried; so that when Seeds cannot be had, this Method may be practised successfully: I suppose the common Sort will also take from Cuttings; but this I have not experienced; so cannot recommend it to Practice.

These Trees are so very ornamental, that no large Garden can be complete without many of them; and it is to these Trees that the Italian Villas owe a great Share of their Beauty. For there is no Tree so proper to place near Buildings; the pyramidal upright Growth of their Branches affords a picturesque Appearance, and obstructs not the View of the Building; and the dark green of their Leaves make a fine Contrast with the white of the Building; so that, where-ever there are Temples or other Buildings erected in Gardens, there is no Sort of Tree so proper to place near them as these. In all the Landscapes of Italian Villas, we see many Cypress Trees represented, which have a very agreeable Effect in the Picture; and the Trees, when rightly disposed in a Garden, afford a no less agreeable Prospect.

The Seeds of the 6th Sort were sent me from the Cape of Good Hope, where the Trees grow naturally, and by the Account which I received with the Seeds, the Cones are black when ripe. The young Plants which I have raised from those Seeds have loose spreading Branches, closely garnished with narrow strait Leaves, which come out opposite, and are alternately crossing each other, these are near one Inch long, and of a light green Colour; they continue in Verdure all the Year. These Plants being young, are too tender to thrive in the open Air in England as yet, but when they have obtained more Strength, it is very probable they may do well in warm Situations. I had two of these Plants growing in the full Ground, which were killed in the Winter 1756. But those which were placed under a Frame, where there were no Covering of Glass, and only wooden Shutters, were not injured by the Cold, though the Earth of the Pots was frequently hard frozen.

CURCUMA. Lin. Gen. Plant. 6. *Cannacorus*. Tourn. Inst. R. H. 367. Turmeric.

The Characters are,

The Flowers have each several Spatulae, which are single and drop off; the Flower hath one Petal with a narrow Tube, which is cut at the Brim into 3 Segments; it hath an oval pointed Nectarium of one Leaf, inserted in the Sinus of the largest Segment of the Petal; it hath 5 Stamina, 4 of which are barren, and one fruitful, which is situated

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situated within the Nectarium, and hath the Appearance of a Petal, having a bifid Point, to which the Summit adheres. It hath a roundish Germen situated under the Flower, supporting a Style the Length of the Stamina, crowned by a single Stigma. The Germen becomes a roundish Capsule having 3 Cells filled with roundish Seeds.

The Species are,

1. *CURCUMA foliis lanceolato-ovatis, nervis lateralibus rarissimis.* Lin. Sp. Plant. 2. *Curcuma* with Spear-shaped oval Leaves, having very few Nerves on the Sides. This is the *Curcuma radice rotundâ.* C. B. Turmeric with a round Root.

2. *CURCUMA foliis lanceolatis nervis lateralibus numerosissimis.* Lin. Sp. Pl. 2. *Curcuma* with Spear-shaped Leaves having many lateral Veins. This is the *Curcuma radice longâ.* H. L. 208. Turmeric with a long Root.

The 1st Sort hath a fleshy jointed Root, somewhat like that of Ginger, but rounder; which sends up several Spear-shaped oval Leaves, which rise upwards of a Foot high; these have one longitudinal Mid-rib, and a few transverse Nerves running from the Mid-rib to the Sides, they are of a Sea-green Colour; from between these arise the Flower Stalks, supporting a loose Spike of Flowers of a pale yellowish Colour, inclosed in several different Spathæ or Sheaths, which drop off. They are never succeeded by Seeds in the Gardens here.

The 2d Sort hath long fleshy Roots of a deep yellow Colour, which spread under the Ground, like those of Ginger; they are about the Thickness of a Man's Finger, having many round knotty Circles; from which arise 4 or 5 large Spear-shaped Leaves standing on long Foot Stalks; they have a thick longitudinal Mid-rib, from which a numerous Quantity of Veins are extended to the Sides; these Leaves are of a glaucous or Sea-green Colour. The Flowers grow in loose scaly Spikes on the Top of the Foot Stalks, which arise from the larger Knobs of the Roots, and grow about a Foot high, they are of a yellowish red Colour, and shaped somewhat like those of the Indian Reed.

These Plants grow naturally in India, from whence the Roots are brought to Europe for Use. These are very tender, so will not live in this Country, unless they are placed in a warm Stove. As they do not produce Seeds in England, they are only propagated by parting their Roots; the best Time for removing and parting these Roots is in Spring before they put out new Leaves, for the Leaves of these Plants decay in Autumn, and the Roots remain inactive till the Spring, when they put out fresh Leaves. These Roots should be planted in rich Kitchen Garden Earth, and the Pots should be constantly kept plunged in a Bark Bed in the Stove. In the Summer Season when they are in a growing State, they will require to be frequently refreshed with Water, but it should not be given in large Quantities; they should also have a large Share of Air admitted to them in warm Weather; when the Leaves are decayed, they should have very little Wet, and must be kept in a warm Temperature of Air, otherwise they will perish. These Plants usually flower in August, but it is only the strong Roots which flower, so they must not be parted small, where the Flowers are desired.

CURRAN-TREE. See Ribes.

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CURURU. See Paullinia.

CUSPIDATED PLANTS are those whose Leaves are pointed like a Spear.

CUSTARD-APPLE. See Annona.

CYANUS. See Centaurea.

CYCLAMEN. Lin. Gen. Pl. 184. Tourn. Inst. Cyclamen, in French Pain de Pourceau. [Κυκλάμιον, of Κύκλος, Gr. a Circle; because the Root of this Plant is orbicular; it is called Sowbread, because the Root is round like a Loaf, and the Sows eat it.] Sowbread.

The Characters are,

The Flower hath a roundish permanent Emplacement of one Leaf divided into 5 Parts at the Top. It hath one Petal with a globular Tube which is much larger than the Emplacement, the upper Part is divided into 5 large Segments which are reflexed; it hath 5 small Stamina situated within the Tube of the Petal, terminated by acute Summits connected in the Neck of the Tube. It hath a roundish Germen supporting a slender Style, which is longer than the Stamina and crowned by an acute Stigma. The Germen becomes a globular Fruit with one Cell opening in 5 Parts at the Top, inclosing many oval angular Seeds.

The Species are,

1. *CYCLAMEN foliis hastato-cordatis angulatis.* Cyclamen with Spear-pointed Heart-shaped Leaves, which are angular. This is the *Cyclamen bedera folio.* C. B. P. 306. Sowbread with an Ivy Leaf.

2. *CYCLAMEN foliis orbiculato-cordatis, infernè purpurascens.* Cyclamen with round Heart-shaped Leaves, purple on their under Side.

3. *CYCLAMEN foliis cordatis serratis.* Cyclamen with sawed, Heart-shaped Leaves. This is the Heart-shaped Spring, or Persian Cyclamen.

4. *CYCLAMEN hyeme & vere florens folio anguloso amplo, flore albo, basi purpurea, Persicum dictum.* H. R. Par. Winter and Spring flowering Sowbread, with a large angular Leaf, and a white Flower purple at the Bottom; called Persian Cyclamen.

5. *CYCLAMEN radice inæquali, foliis orbiculatis.* Cyclamen with an unequal Root and round Leaves. This is the *Cyclamen radice castaneæ magnitudinis.* C. B. P. Sowbread with a Root the Size of a Chestnut.

6. *CYCLAMEN Hyemale, orbiculatis foliis infernè rubentibus, purpurascens flore.* Coum Herbariorum. H. R. Par. Winter Cyclamen with orbicular Leaves, red on their under Side, and a purplish Flower; the Coum of the Herbalists.

The 1st Sort is the most common in the English Gardens; this grows naturally in Austria, Italy, and other Parts of Europe, so will thrive in the open Air in England, and is never killed by the Frost. It hath a large orbicular compressed Root, from which arise a great Number of angular Heart-shaped Leaves, on single Foot Stalks, which are 6 or 7 Inches long; these Leaves are marked with black in their Middle, the Flowers appear before the Leaves, rising immediately from the Root, with long fleshy Foot Stalks. This appears in August and September, and soon after the Leaves come out, and continue growing all the Winter and Spring till May, when they begin to decay, and in June they are entirely dried up; after the Flowers are fallen, the Foot Stalks twist up like a Screw, enclosing the Germen in the Center, and lie close to the Surface of the Ground between the Leaves,

Leaves, which serves as a Protection to the Seed; this Germen becomes a round fleshy Seed Vessel with one Cell inclosing several angular Seeds. The Seeds ripen in *June*, and should be sown in *August*. There are two Varieties of this, one with a white, the other with a purplish Flower, which appear at the same Time.

The 2d Sort flowers in Autumn; this is at present very rare in *England*; the Leaves of this are large orbicular and Heart-shaped at their Base, and of a purple Colour on their under Side, the Leaves and Flowers come up from the Root at the same Time, the Flowers are of a purplish Colour and their Bottoms of a deep red. It flowers late in Autumn, and requires Protection from the Frost in Winter.

The 3d Sort hath stiff Heart-shaped Leaves sawed on their Edges, these have strong fleshy Foot Stalks near 6 Inches long, of a purple Colour, as are also the Veins of the Leaves on their under Side, but the upper Side is veined and marbled with white. The Flowers rise with single Foot Stalks from the Root; these are pure white with a bright purple Bottom, the Petal is divided into 9 Segments to the Bottom, which are twisted and reflexed backward like the other Sorts. This flowers in *March* and *April*, and the Seeds ripen in *August*.

The 4th Sort is commonly called the *Persian Cyclamen*; it hath large angular Heart-shaped Leaves, whose Edges are entire; they are veined and marbled with white on their upper Side, and stand on pretty long Foot Stalks, the Flowers are large, of a pale purple Colour, with a bright red or purple Bottom. These appear in *March* and *April*, and the Seeds ripen in *August*.

The 5th Sort hath a small irregular Root, not larger than a Nutmeg, the Leaves are orbicular and small, the Flowers are of a flesh Colour, small, and have purple Bottoms. They appear in Spring, but rarely produce Seeds in *England*.

The 6th Sort is not so tender as the four last mentioned, so may be planted in warm Borders, and, if covered in hard Frost, will thrive and flower very well. This hath plain orbicular Leaves, which have shorter and weaker Foot Stalks than any of the other; their under Sides are very red the Beginning of Winter, but that Colour goes off in Spring; their upper Sides are smooth, of a lucid green, and spread open flat, whereas the other Sorts are hollowed, and reflexed at their Base. The Flowers are a very bright purple, and appear in the Middle of Winter, at a Time when there are few others, which renders the Plants more valuable. The Seeds ripen the End of *June*.

There are several other Varieties of this Plant, which chiefly differ in the Colour of their Flowers, particularly among the *Persian* Kind, of which there is one with an entire white Flower, which smells very sweet; but as these are accidental Variations, I have not enumerated them, those which are here mentioned being undoubtedly distinct Species; for I have many Years propagated them from Seeds, and have not found them vary, nor have I heard that any other Person has observed either of them alter farther than varying their Colours. Tho' Dr. *Linnaeus* supposes them but one Species, it is well known that the first Sort will endure the greatest Frost in the open Air, whereas all the *Persian* Sorts are tender and require Shelter in Winter.

All the Sorts are propagated by Seeds, which should be sown soon after they are ripe, in Boxes, or Pots filled with light Kitchen Garden Earth mixed with a little Sand, and covered about half an Inch deep, placing them where they may have only the Morning Sun till the Beginning of *September*, when they may be removed to a warm Exposure. Those of the 1st Sort may be plunged into the Ground, close to a South Wall, a Pale or Reed Hedge in *October*, where, if it should be very severe Frost, it will be proper to cover them either with Mats or Pease Haulm, but in common Winters they will not require any Covering. The Pots or Tubs in which the *Persian* Kinds are sown, should then be placed under a common hot Bed Frame, where they may be protected from Frost and hard Rains, but in mild Weather the Glasses may be taken off every Day to admit fresh Air to them. The 1st Sort will come up about *Christmas*, if the Seeds were sown in *August*, and their Leaves will continue green till *May*; those of the *Persian* Kinds will come up early in Spring, and continue green till *June*, when they begin to decay; then they should be removed to an East Aspect, where they will have only the Morning Sun, in which Situation they may remain till the Middle of *August*, during which Time they should have very little Water, for now the Roots are in an inactive State, when much Wet will rot them. The Pots and Tubs in which they are sown, must be constantly kept clean from Weeds, for if the Weeds are permitted to grow, their Roots will closely entangle with those of the *Cyclamen*, so that in pulling out the Weeds, the other Roots will be drawn out with them. In the Beginning of *October*, there should be some fresh Earth spread over the Tubs or Pots, which should be removed again into Shelter, as before, and the following Summer they must be managed in the same Way till their Leaves decay, when they should be carefully taken up, and those of the 1st Sort placed in a warm Border at 3 or 4 Inches Distance, but the other Sorts must be planted in Pots to be sheltered in Winter.

The 3d, 4th, and 5th Sorts, are more impatient of Cold and Wet than the 3 other; these must constantly be preserved in Pots filled with sandy light Earth, and housed in Winter; but should be placed near the Glasses, where they may enjoy as much free open Air as possible, when the Weather will permit; for if they are crowded under other Plants, and are kept too close, they are very subject to mould and rot; nor should they have much Water in Winter, which is also very injurious to them; but whenever they want Water, it should be given sparingly. In Summer these Plants may be exposed to the open Air, when their green Leaves will decay; at which Time you should remove them to a Place, where they may have the Morning Sun until 11 o'Clock; but during the Time the Roots are destitute of Leaves, they should have very little Water, because at that Season they are not capable of discharging the Moisture. This is also the proper Season to transplant the Roots, on to fresh earth them; and as the Autumn comes on, and the Heat decreases, they may be removed into Places more exposed to the Sun, where they may remain until *October* before they need be housed.

Toward *Christmas*, if the Roots are in good Health, the

the 6th Sort will begin to flower, and continue producing fresh Flowers until the Middle of *February*; these will be succeeded by the *Persian* Sorts, which continue till *May*; but if you intend to have any Seeds, you must let the Pots be placed so as to receive a great Share of fresh Air; for if their Flowers are drawn up in the House, they seldom produce any Seeds. These Seeds are ripe about *July*, when they should be immediately sown in Pots or Cases of good light undunged Earth; which should be sheltered in Winter under a Frame, and exposed in Summer as directed for the older Roots; observing to remove them into Pots at a wider Distance when they are two Years old; and so from Time to Time, as their Roots increase in Bulk, you must give them more Room; in about 4 or 5 Years they will begin to flower, when you should let each Root have a separate Pot, which at first may be small; but when the Roots are grown large, they must be put into larger Pots.

These Sorts have been planted under warm Walls in the full Ground, where in mild Winters they have done very well, but in severe Frost all those Roots have been destroyed; therefore, whenever these Roots are planted in an open Border, there should be common hot Bed Frames placed over them in Winter, that in bad Weather they may be covered, to protect them from Frost: And where they are thus managed, the Plants will produce more Flowers, and those much fairer, than what are produced from the Roots in Pots; from these there may always be good Seeds expected; therefore those who are curious in Flowers, should have a Border framed over on Purpose for these, and the *Guernsey* and *Belladonna* Lilies, with some other of the curious bulbous-rooted Flowers; in which Border there may be many of these curious Flowers cultivated, to more Advantage than in any other Method now practised.

CYDONIA. *Tourn. Inst. R. H.* 632. *Tab.* 405. *Pyrus. Lin. Gen. Plant.* 550. The Quince Tree.

The Characters are,

The Flower is composed of 5 large roundish concave Petals, inserted in the permanent Empalement of one Leaf. The Germen is situated under the Flower, and supports 5 slender Styles, crowned by single Stigmas; these are attended by near 20 Stamina, not so long as the Petals; the Germen becomes a roundish Fruit, which is fleshy and divided into 5 Cells, in which are lodged several hard Seeds.

The Species are,

1. CYDONIA foliis oblongo-ovatis subtus tomentosis, pomis oblongis basi productis. Quince Tree with oblong oval Leaves, woolly on their under Side, and an oblong Fruit lengthened at the Base. This is the *Cydonia fructu oblongo leviori. Tourn. Inst.* Quince with an oblong smoother Fruit, commonly called the Pear Quince.

2. CYDONIA foliis ovatis, subtus tomentosis, pomis rotundioribus. Quince Tree with oval Leaves, woolly on their under Side, and a rounder Fruit. This is the *Cydonia fructu breviori & rotundiore. Tourn. Inst.* Quince with a rounder and shorter Fruit, called the Apple Quince.

3. CYDONIA foliis obversè ovatis subtus tomentosis. This is the *Cydonia latifolia Lusitanica. Tourn. Inst.* 633. Broad leaved Portugal Quince.

There are other Varieties of this Fruit propagated in Fruit Gardens, and in the Nurseries for Sale, one of

which is soft and eatable; there is another with a very astringent Fruit, and a third with a very small Fruit, cottony all over, and scarce worth keeping: These I suppose are feminal Variations, but the 3 Sorts before enumerated, I take to be distinct Species, having propagated them by Seeds, and have not found them vary.

The *Portugal* Quince is the most valuable, the Pulp of it turning to a fine purple when stewed or baked, and becomes much softer and less austere than the others, so much better for making Marmalade.

They are all easily propagated, either by Layers, Suckers, or Cuttings, which must be planted in a moist Soil. Those raised from Suckers are seldom so well rooted as those which are obtained from Cuttings or Layers; and are subject to produce Suckers again in greater Plenty, which is not so proper for Fruit bearing Trees. The Cuttings should be planted early in Autumn, and in dry Weather must be often watered to encourage their Rooting. The 2d Year after they should be removed into a Nursery at 3 Feet Distance Row from Row, and one Foot asunder in the Rows, where they must be managed as directed for Apples. In 2 or 3 Years Time these Trees will be fit to transplant, where they are to remain for good; which should be either by the Side of a Ditch, River, or in some other moist Place, where they will produce a greater Plenty, and much larger Fruit than in a dry Soil; though those in the dry Soil will be better tasted, and earlier ripe. These Trees require very little pruning; the chief Thing to be observed is, to keep their Stems clear from Suckers, and cut off such Branches as cross each other; likewise all upright luxuriant Shoots from the Middle of the Tree should be taken entirely out, that the Head may not be too much crowded with Wood, which is of ill Consequence to all Sorts of Fruit Trees. These Sorts may also be propagated by budding or grafting upon Stocks raised by Cuttings, so that the best Sorts may be cultivated in greater Plenty this Way, than by any other Method; and these Trees will bear Fruit much sooner and be more fruitful, than those which come from Suckers or Layers.

These are also in great Esteem for Stocks to graft and bud Pears on; which for Summer and Autumn Fruits are a great Improvement to them, especially those designed for Walls and Espaliers: For the Trees on these Stocks do not shoot so vigorously as those on free Stocks, may be kept in less Compass, and are sooner disposed to bear Fruit: But hard Winter Fruits do not succeed so well on these Stocks, their Fruit being very subject to crack, and are commonly stony, especially all the breaking Pears; therefore these Stocks are only proper for the melting Pears, and for a moist Soil. The best Stocks are those raised from Cuttings or Layers.

As the Pear will take upon the Quince by grafting or budding, and so *vice versa*, we may conclude there is a near Alliance between them; but as neither of these will take on the Apple, nor that upon either of these, so we should separate them under different Genera, as will be further mentioned under the Article *Malus*.

CYNANCHUM. *Lin. Gen. Plant.* 268. *Apocynum. Tourn. Inst.* 91. *Periploca. Tourn. Inst.* 93. *Tab.* 22.

The Characters are,

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The Flower hath one Petal, it hath scarce any Tube, but is spread open, plain, and divided into 5 Parts; this hath a small, erect, permanent Empalement of one Leaf, divided into 5 Parts; the Nectarium, which is situated in the Center of the Flower, is erect, cylindrical, and the Length of the Petal. It hath 5 Stamina, which are parallel to the Nectarium, and of the same Length, terminated by Summits, which reach to the Mouth of the Petal. It hath an oblong bifid Germen, with scarce any Style, crowned by 2 obtuse Stigmas; the Empalement becomes a Capsule with 2 oblong pointed Leaves, having a Cell which opens longitudinally, and is filled with Seeds lying over each other imbricatum, and are crowned with long Down.

The Species are,

1. *CYNANCHUM caule volubili herbaceo, foliis cordato-oblongis glabris.* Hort. Cliff. 79. *Cynanchum* with a twining herbaceous Stalk, and oblong smooth Heart-shaped Leaves. This is the *Periploca Monspeliaca foliis acutioribus.* Tourn. Inst. 93. *Montpelier Periploca* with acute pointed Leaves, commonly called *Montpelier Scammony.*

2. *CYNANCHUM caule volubili herbaceo, foliis reniformi-cordatis acutis.* Hort. Cliff. 79. *Cynanchum* with a twining herbaceous Stalk, and Kidney Heart-shaped pointed Leaves. This is the *Periploca Monspeliaca foliis rotundioribus.* Tourn. Inst. *Montpelier Periploca* with rounder Leaves, or round leaved *Montpelier Scammony.*

3. *CYNANCHUM caule volubili infernè suberoso fisso, foliis cordatis acuminatis.* Hort. Cliff. *Cynanchum* with a twining Stalk, fungous, and having Fissures on the under Side, and Heart-shaped pointed Leaves. This is the *Periploca Caroliniensis, flore minore stellato.* Hort. Elt. *Carolina Periploca* with a smaller starry Flower.

4. *CYNANCHUM caule volubili fruticoso, infernè suberoso fisso, foliis ovato-cordatis.* Hort. Cliff. 79. *Cynanchum* with a shrubby twining Stalk, whose lower Part is fungous and has Fissures, and oval Heart-shaped Leaves. This is the *Periploca scandens, folio citri, fructu maximo.* Plum. Cat. 2. *Periploca* with a climbing Stalk, a Citron Leaf, and a large Fruit.

5. *CYNANCHUM caule erecto divaricato, foliis cordatis glabris.* Hort. Cliff. 79. *Cynanchum* with an upright divaricated Stalk, and Heart-shaped smooth Leaves. This is the *Apocynum folio subrotundo.* C. B. P. 302. *Dogbane* with a roundish Leaf.

6. *CYNANCHUM caule volubili fruticoso, foliis cordatis acutis asperis, floribus lateralibus.* *Cynanchum* with a twining shrubby Stalk, Heart-shaped pointed rough Leaves, and Flowers growing from the Sides of the Stalks. This is the *Apocynum scandens floribus amplis patulis luteis.* Houst. Mss. Climbing *Dogbane* with large yellow spreading Flowers.

7. *CYNANCHUM caule scandente, foliis cordatis acuminatis glabris.* *Cynanchum* with a climbing Stalk, and smooth Heart-shaped pointed Leaves. This is the *Apocynum Bithynicum, arbores altissimas scandens, folio subrotundo.* Tourn. Cor. *Dogbane* of *Bithynia* climbing to the Tops of the tallest Trees, having a roundish Leaf.

The 1st and 2d Sorts grow naturally about *Montpelier*; these have perennial creeping Roots, but annual Stalks, which decay to the Root every Autumn, and rise afresh in Spring, which twist themselves like Hops; round whatever Plants are near them, and rise to the Height of 5 or 6 Feet; the first of these is garnished with oblong

Heart-shaped smooth Leaves ending in acute Points, and are placed by Pairs opposite on long Foot Stalks; the Flowers come out in small Bunches from the Wings; they are of a dirty white Colour, and divided into 5 acute Segments, which spread open in Form of a Star. These appear in June and July, but are not succeeded by Seed Vessels in England, which may be occasioned by their Roots creeping so far under Ground; for most of those Plants which propagate themselves so much by their Roots, become barren of Seeds, especially if their Roots have full Liberty to extend.

The 2d Sort differs from the 1st in the Shape of its Leaves, which are broader and rounder at their Base. The Roots of this are very thick, running deep into the Ground, and extend far on every Side, so that where this Plant hath got Possession of the Ground it is not easily extirpated, for every Piece of the Root will shoot, which may happen to be left in the Ground. Both these Plants abound with a milky Juice like the Spurge, which issues out where they are broken; and this milky Juice when concentered, has been frequently sold for *Scammony.*

These Plants propagate so fast by their creeping Roots, that few will admit them into Gardens: The Roots may be transplanted any Time after their Stalks decay, till they begin to shoot in the Spring.

The 3d Sort grows naturally in *Carolina*, from whence the Seeds were brought to *England*; this is a perennial Plant with twining hairy Stalks, which, if supported, will rise 6 or 7 Feet high; the lower Part of the Stalks are covered with a thick fungous Bark, somewhat like Cork, which is full of Fissures; these Stalks are slender, and garnished at each Joint with two oblong Heart-shaped pointed Leaves, standing on long hairy Foot Stalks. The Flowers are produced in small Bunches at the Wings of the Leaves, these are Star-shaped and green when they first appear, but afterward fade to a worn-out purple Colour. They appear in July and August, but are not succeeded by Seeds in *England.*

This Plant will live in the open Air in *England*, if planted in a dry Soil and warm Situation. It may be propagated by laying down some of the young Shoots about *Midsummer*, which, if they are now and then refreshed with Water, will put out Roots, so may be transplanted in Autumn, where they are designed to remain. The Roots should be covered in Winter with some rotten Tan to keep out the Frost, otherwise in severe Winters they are liable to be destroyed.

The 4th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me; this rises with a twining Stalk to the Height of 20 Feet or more, provided it hath Support; the lower Part of the Stalks are covered with a thick fungous Bark, full of Fissures, which gape open; the Leaves are oblong and smooth, and placed by Pairs opposite, standing on long Foot Stalks: The Flowers are produced from the Wings of the Leaves in small Bunches, they are Star-shaped, of a yellowish green Colour, but are not succeeded by Pods in *England.*

This Sort is tender, so will not thrive in this Country unless placed in a warm Stove, and treated as other tender Plants from the same Country; as it abounds with a milky Juice, the Plants must have little Water in Winter. It may be propagated by laying down the young Shoots, which in 3 or 4 Months will put out Roots, and

may then be transplanted into Pots filled with light sandy Earth, and plunged in the Tan Bed in the Bark Stove, where the Plants should continue all the Year.

The 5th Sort grows naturally in Syria; this is a perennial Plant, which rises with slender upright Stalks about 3 Feet high, garnished with broad smooth Heart-shaped Leaves ending in Points, placed by Pairs opposite; the Flowers come out from the Wings of the Leaves in small Bunches standing on branching Foot Stalks; these are small and white, greatly resembling those of the common white *Asclepias*, or Swallow-wort, these are succeeded by oblong taper Pods, filled with flat Seeds crowned with Down, but these rarely ripen in this Country.

It is propagated by parting the Root; the best Time for doing this or transplanting the Roots, is in Spring before they shoot: This requires a warm Situation, otherwise it will not live abroad in England.

The 6th Sort grows naturally at *La Vera Cruz*, from whence the Seeds were sent me; this hath a shrubby twining Stalk, which twists about whatever Prop is near it, and rises 20 Feet or upward; the Stalks are very slender, armed with small stinging Hairs, and garnished with broad Heart-shaped Leaves, which end in acute Points; these are placed by Pairs at each Joint, which are far distant, and have slender Foot Stalks; they are covered with rough Hairs on their under Side; the Flowers are produced in small Clusters, sitting close to the Side of the Stalks; they are pretty large, yellow, and Star-shaped, spreading open to the Bottom; they are succeeded by long swelling Pods, filled with flat Seeds lying *imbricatim*, which are crowned with long Down.

This Sort is tender, so requires the same Treatment as the 4th, and is propagated the same Way.

The 7th Sort grows naturally in *Bitbynia*, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris, where they succeeded. Sir George Wheeler also gathered this Plant in his Travels, and mentions it by the Title of *Periploca latifolia*, or broad leaved Silk. This rises with a strong round Stalk, which fastens itself to a neighbouring Tree, and mounts to the Top; the Stalks are garnished with broad Heart-shaped smooth Leaves, standing on long Foot Stalks; these are generally placed opposite by Pairs, but sometimes there are 3 Leaves arising from the same Joint, one of which hath a much longer Foot Stalk than the other two; the Leaves are 2 Inches and a Half long, and almost as broad at their Base, terminating in acute Points: The Flowers come out from the Wings of the Leaves, standing on pretty long branching Foot Stalks; they are Star-shaped, and of a pale yellowish Colour. They appear in July and August, but are not succeeded by Seeds in England.

This Sort must be planted in a warm Situation, otherwise it will not live through the Winter in England. It requires the same Treatment as the 5th Sort, but may be propagated by laying down the young Shoots in the same Manner as the 4th Sort. Where these are preserved in Gardens, there should be tall Props put down by each Plant to support them, otherwise they will lie on the Ground, and twist about the Plants which grow near them, so will be troublesome and unsightly.

CYNARA. Lin. Gen. Plant. 835. *Cinara*. Tourn. Inst. R. H. 442. Artichoke, in French *Artichaut*.

The Characters are,

It hath a compound Flower, made up of many hermaphrodite Florets, included in one common scaly Empalement, which is swollen in the Bottom. The Florets are tubulous, equal, and uniform, divided at the Top into 5 narrow Segments. These have 5 short hairy Stamina, terminated by cylindrical Summits, which have 5 Indentures; at the Bottom of each is situated an oval Germen, supporting an oblong Style, crowned by an oblong indented Stigma. The Germen becomes a single oblong compressed four cornered Seed, crowned with long hairy Down.

The Species are,

1. CYNARA foliis subspinosis, pinnatis indivisisque, calycinis squamis ovatis. Lin. Sp. Pl. 827. Artichoke with spiny Leaves, winged and undivided, and an oval scaly Empalement. This is the *Cynara hortensis aculeata*. C. B. P. 383. The green or French Artichoke.

2. CYNARA foliis pinnatis inermibus, calycinis squamis obtusis emarginatis. Artichoke with winged Leaves having no Spines, and obtuse indented Scales to the Empalement. This is the *Cynara hortensis foliis non aculeatis*. C. B. P. 383. The Globe Artichoke.

3. CYNARA foliis spinosis, omnibus pinnatifidis, calycinis squamis ovatis. Lin. Sp. Plant. 827. *Cynara* with prickly Leaves, all ending in winged Points, and oval Scales to the Empalement. This is the *Cynara spinosa*, *cujus pediculi resistuntur*. The Cardoon, in French *Chardon*.

4. CYNARA foliis spinosis, pinnatifidis, subtus tomentosis, calycinibus squamis subulatis. *Cynara* with winged prickly Leaves, woolly on their under Side, and Awl-shaped Scales to the Empalement. This is the *Cynara sylvestris Baetica*. Clus. Cur. Wild Artichoke of Spain.

The 1st Sort is commonly known by the Title of French Artichoke, being the Sort which is most commonly cultivated in France, and is the only Kind in Guernsey and Jersey; the Leaves are terminated by short Spines, the Head is oval, and the Scales do not turn inward at the Top, like those of the Globe Artichoke, they are also of a green Colour; the Bottoms of these are not near so thick of Flesh as those of the Globe; and have a perfumed Taste, which to many Persons is very disagreeable, so that it is seldom cultivated in the Gardens near London, where the Globe or red Artichoke is the only Sort in Esteem. The Leaves of this are not prickly, the Head is globular, a little compressed at Top, the Scales lie close over each other, and their Ends turn inward, so as to closely cover the Middle.

The Culture of these having been fully treated under the Article *Artichoke*, the Reader is desired to turn to that, to avoid Repetition.

The Cardoon, or Cardoon, is propagated in the Kitchen Gardens to supply the Markets; this is annually raised from Seeds, which should be sown on a Bed of light Earth in March; and when the Plants come up, they should be thinned where too close; and if the Plants are wanted, those which are drawn out may be transplanted into a Bed at about 3 or 4 Inches Distance, where they should remain till they are transplanted out for good. These young Plants must be kept clean from Weeds, and in June transplanted on a moist rich Spot of Ground at about 4 Feet asunder every Way; the Ground should be well dug before they are planted, and the Plants well watered until they have taken new Root, after which the Ground must be kept very clean from Weeds, to encourage

courage the Growth of the Plants; as they advance in Height, there should be some Earth drawn up about each Plant; and when they are fully grown, their Leaves should be closely tied up with a Hay Band, and the Earth drawn up in Hills about each Plant, almost to their Tops, being careful to keep the Earth from falling between the Leaves, which may occasion the rotting of the Plants. This Earth should be smoothed over the Surface that the Wet may run off, and not fall into the Center of the Plants, which will also cause them to rot; in about 5 or 6 Weeks after the Plants have been thus earthed, they will be blanched enough for Use; so that if a Succession of them are wanted for the Table, there should be but few Plants earthed up at one Time, but every Week or ten Days, there may be a Part of them earthed, in Proportion to the Quantity desired.

Toward the Middle, or latter End of November, if the Frost should be severe, it will be proper to cover the Tops of the Plants that remain with Pease Haulm, or Straw, to prevent the Frost from penetrating to the tender Leaves; but this should be taken off again in mild Weather; if this Care is taken, the Plants may be preserved for Use all the Winter.

If a few of the Plants are planted out in a warm Situation to stand for Seed, they should not be blanched, but only in very hard Frost some light Litter, or Pease Haulm, may be laid round them, which should be removed in Spring, and the Ground gently dug between the Plants, which will not only destroy the Weeds, but also encourage the Roots to shoot out on every Side, whereby their Stems will be stronger; these will flower about the Beginning of July, and if the Season proves dry, their Seeds will ripen in September, but in cold wet Seasons, these Seeds will not come to Maturity in England.

The 4th Sort grows naturally in Spain, also on the African Shore, and is preserved in Gardens for Variety; this is very like the 3d Sort, but the Stems of the Leaves are much smaller, and do not grow more than Half so high. The Heads of this have some Resemblance to those of the French Artichoke, but have no Meat, or fleshy Substance in their Bottoms; this may be planted in the same Manner as the 3d Sort, at about 3 or 4 Feet apart, and will require no other Treatment than keeping them clean from Weeds; the second Year they will flower, and, if the Season proves dry, they will ripen their Seeds in September, and the Plants generally decay the following Winter.

CYNOGLOSSUM. Lin. Gen. Pl. 168. Tourn. Inst. *Omphalodes*. Tourn. 140. [Κυνόγλωσσον, of Κυνός, and γλῶσσα, Gr. the Tongue, because the Leaves resemble a Dog's Tongue]. Hounds Tongue, in French, *Langue de Chien*.

The Characters are,

It hath a Funnel-shaped Flower of one Leaf, with a long Tube, and short Brim, slightly cut into 5 Parts, and is shut up at the Chaps; this hath an oblong permanent Em-palement, cut into 5 acute Parts. The Flower hath 5 short Stamina, in the Chaps of the Petal, terminated by roundish Summits, and at the Bottom of the Tube are situated 4 Germi-na, between which arises a permanent Style, the Length of the Stamina, crowned by an indented Stigma; the Em-palement becomes 4 Capsules, inclosing 4 oval Seeds.

The Species are,

1. **CYNOGLOSSUM** *flaminibus corollâ brevioribus, foliis lato-lanceolatis tomentosis sessilibus.* Lin. Sp. Plant. 134. Hounds Tongue with Stamina shorter than the Petal, and broad Spear-shaped woolly Leaves, which sit close to the Stalk. This is the *Cynoglossum majus vulgare*. C. B. P. 257. Common Greater Hounds Tongue.

2. **CYNOGLOSSUM** *flaminibus corollam æquantibus.* Hort. Upsal. 33. Hounds Tongue with Stamina equaling the Petal. This is the *Cynoglossum montanum maximum*. Tourn. Inst. Greatest Mountain Hounds Tongue.

3. **CYNOGLOSSUM** *Creticum latifolium sætidum.* C. B. P. 257. Broad-leaved stinking Hounds Tongue of Crete.

4. **CYNOGLOSSUM** *Creticum, argenteo angusto folio.* C. B. P. 257. Hounds Tongue of Crete, with a narrow silvery Leaf.

5. **CYNOGLOSSUM** *Virginianum flore minimo albo.* Ban-nister. Cat. Virginia Hounds Tongue with a very small white Flower.

6. **CYNOGLOSSUM** *caule erecto ramoso, foliis lanceolatis scabris sessilibus, spicis florum longissimis.* Hounds Tongue with an upright branching Stalk, Spear-shaped rough Leaves sitting close, and very long Spikes to the Flowers. This is the *Omphalodes Lusitanica elatior Cynoglossi folio*. Tourn. Inst. R. H. 143. Taller Portugal Navelwort with a Hounds Tongue Leaf.

7. **CYNOGLOSSUM** *foliis lineari-lanceolatis glabris.* Hort. Cliff. 47. Hounds Tongue with smooth, narrow, Spear-shaped Leaves. This is the *Omphalodes Lusitanica lini folio*. Tourn. Inst. 140. Portugal Navelwort with a Flax Leaf, commonly called *Venus Navelwort*.

8. **CYNOGLOSSUM** *repens, foliis radicalibus cordatis.* Hort. Cliff. 47. Creeping Hounds Tongue, whose lower Leaves are Heart-shaped. This is the *Omphalodes pumila verna symphyti folio*. Tourn. Inst. 140. Low Spring Navelwort with a Comfrey Leaf.

The 1st Sort grows naturally by the Side of Hedges in many Parts of England, so is seldom admitted into Gardens; the Roots are used in Medicine, which are gathered by the Herb Folks in the Fields. The Leaves have a strong Odour, like that of Mice in a Trap. It flowers in June, and the Seeds ripen in Autumn.

The 2d Sort grows naturally on the Apennine Mountains; the Leaves are much larger, the Petal of the Flower is shorter, the Plants grow taller than the 1st, and come earlier to flower in Spring; this is equally hardy as the common Sort, and where the Seeds are permitted to scatter, Plenty of the Plants arise without Care.

The 3d Sort grows naturally in Andalusia, I received the Seeds from Gibraltar; this hath a tall branching Stalk, garnished with oblong woolly Leaves, which embrace the Stalk with their Base. The Flowers are produced in loose Spikes, which come out from the Side of the Stalk, they are from 6 to 8 Inches long, and the Flowers are thinly placed on one Side; these are blue, striped with red, and appear in June. The Seeds ripen in Autumn, soon after which the Root decays.

The 4th Sort grows naturally in Spain, and the Island of Crete; I received this from Gibraltar, with those of the former; this rises with an upright Stalk, little more than a Foot high, garnished with long, narrow, silvery Leaves, having no Foot Stalks. The Flowers are produced from the Side, and at the Top of the Stalks; they are thinly dispersed on the Side, but at the Top are in

Small Clusters; they are of a deep purple Colour, and much longer than the Empalement; these are succeeded by 4 broad Buckler-shaped Seeds, which are rough. It flowers in *June*, and the Seeds ripen in Autumn, soon after which the Roots generally perish.

The 5th Sort grows naturally in *Virginia*, and the northern Parts of *America*; this rises with an upright branching Stalk, near 4 Feet high. The Stalks and Leaves are covered with rough Hairs, the Branches spread out on every Side, and are but thinly garnished with Leaves, from 3 to near 4 Inches in Length, and little more than one Inch broad in the Middle, gradually lessening to both Ends; they have very short Foot Stalks, placed alternate; the Flowers grow scatteringly toward the End of the Branches; these are small and white; they appear in *June*, and are succeeded by 4 small Seeds, which ripen in Autumn, then the Plants decay.

The 6th Sort grows naturally in *Portugal*, where it was first distinguished from the 7th by Dr. *Tournefort*. The 7th Sort had been long before cultivated for Ornament, by the Title of *Venus Navelwort*, but of late Years that has been lost; the 6th Sort is now generally preserved in the *English* Gardens, and the Seeds sold by the Seedsmen under that Title; it is a much larger Plant than the other, so makes a finer Appearance. The Leaves of the 6th Sort are broad at their Base, and gradually narrowed to the End; they are slightly covered with Hairs. The Stalks grow 9 or 10 Inches high, and divide into many Branches, each being terminated by a long loose Spike of white Flowers, standing on separate Foot Stalks; they are succeeded by 4 umbilicated Seeds, from whence it had the Title of *Navelwort*.

The 7th Sort seldom rises more than 5 or 6 Inches high; the Stalks do not branch near so much as those of the 6th; the Leaves are very narrow and long, of a grayish Colour, and smooth; the Flowers grow in short loose Panicles at the End of the Branches; these are white, but smaller than those of the other Sort, and are succeeded by Seeds of the same Form. This Plant was formerly titled *Linum Umbilicatum*, i. e. umbilicated Flax, from the Leaves having some Appearance of Flax, and the Seeds having a Hollow like a Navel.

These are both annual Plants, and have been commonly sown in Gardens, with other low annual Flowers to adorn the Borders of the Flower Garden, but these should be sown in Autumn, for those which are sown in Spring, often fail, especially in dry Seasons, and the autumnal Plants always grow much larger, and come to flower earlier in the Year. The Seeds should be sown where the Plants are designed to remain, for they do not bear transplanting, unless it is performed while they are young. The Plants require no other Culture, but to be thinned where they are too close, and kept clean from Weeds. They flower in *June* and *July*, and the autumnal Plants come a Month earlier; their Seeds ripen in Autumn.

The 8th Sort is a low perennial Plant, which grows naturally in the Woods of *Spain* and *Portugal*, where it usually flowers about *Christmas*; this hath trailing Branches, which put out Roots from their Joints, whereby it propagates very fast. The Leaves are Heart-shaped, of a bright green Colour, and stand on long slender Foot

Stalks. The Flowers grow in loose Panicles, which arise from the Divisions of the Stalk; they are shaped like those of *Borage*, but smaller, and of a lively blue Colour; they appear in *March* and *April*, and in a cool shady Situation continue great Part of *May*, but are rarely succeeded by Seeds; the Plants propagate themselves so fast by their trailing Branches, as to render the Cultivation of them by Seeds unnecessary. It delights in a moist cool Situation.

CYPRIPEDIUM. *Lin. Gen. Plant.* 906. *Calceolus. Tournef. Inst.* Ladies Slipper, in *French*, *Sabot*.

The Characters are,

It hath a simple Spadix. The Germen sits under the Flower, which is covered with a Spatba, or Sheath. The Flowers have 4 or 5 narrow Spear-shaped Petals, which expand. The Nectarium, which is situated between the Petals, is swollen and hollow, in Shape of a Shoe, or Slipper. It hath 2 short Stamina, which sit upon the Pointal, terminated by erect Summits, which join to the upper Lip of the Nectarium; below the Flower, is fixed a slender contorted Germen, supporting a short Style, adhering to the upper Lip of the Nectarium, crowned by an obsolete Stigma. The Germen becomes an oval blunt Capsule with 3 Corners, having 3 Furrows, 3 Valves, and one Cell, filled with small Seeds.

The Species are,

1. CYPRIPEDIUM radicebus fibrosis, foliis ovato-lanceolatis caulinis. *AA. Upsal.* 1740. Ladies Slipper with fibrous Roots, and the Leaves on the Stalks oval and Spear-shaped. This is the *Calceolus Mariae. Ger.* 359.

2. CYPRIPEDIUM scapo unifloro, foliis oblongis glabris, petalis angustis acuminatis. Ladies Slipper with one Flower in a Sheath, oblong smooth Leaves, and very narrow pointed Petals. This is the *Calceolus Mariae luteus. Mor. H. R. Blof.* Yellow Ladies Slipper.

3. CYPRIPEDIUM foliis oblongo-ovatis venosis hirsutis, flore maximo. Ladies Slipper with oblong, oval, veined Leaves, which are hairy, and a very large Flower. *Calceolus flore majore.* Ladies Slipper with a larger Flower.

The 1st Sort grows naturally in some shady Woods in the North of *England*. I found it in the Park of *Borough Hall*, in *Lancashire*, the Seat of the late *Robert Fenwick, Esq.* It hath a Root composed of many fleshy Fibres, from which arise, in Spring, 2, 3, or more Stalks, in Proportion to the Strength of the Root; these grow 9 or 10 Inches high, and are garnished with oval Spear-shaped Leaves, having a few longitudinal Veins; in the Bosom of one of the upper Leaves, is inclosed the Flower Bud, which is supported by a slender Foot Stalk, which generally turns a little on one Side. The Flower hath 4, dark, purple Petals, placed in form of a Cross, which spread wide open. In the Center is situated the large hollow Nectarium, almost as large as a Bird's Egg, shaped like a wooden Shoe, of a pale yellowish Colour, with a few brown Streaks; the Opening is covered with two Ears, the upper one is tender, white, and spotted with purple; the lower is thick, and of an herbaceous Colour. The Flowers appear about the End of *May*, and the Stalks decay early in Autumn.

The 2d Sort grows naturally in *Virginia*, and other Parts of *North America*; this hath longer and smoother Leaves than the former. The two Side Petals of the Flower are long, narrow, and terminate in acute Points, being

being wreathed, or undulated on their Sides. The Nectarium is oblong, and narrower than in the first Sort, and is yellow, spotted with brownish red. The Stalks rise near a Foot and a Half high.

The 3d. Sort grows naturally in America, where the Inhabitants call it *Mocassin* Flower; this rises a Foot and a Half high. The Leaves are of an oblong oval Form, and deeply veined. The Flower is large, of a reddish brown Colour, marked with a few purple Veins. This Sort flowers at the End of May.

All these Sorts are with Difficulty preserved in Gardens; they must be planted in a loamy Soil, and in a Situation where they may have the Morning Sun only. They must be procured from the Places where they naturally grow; the Roots should be seldom removed, for transplanting prevents their flowering.

CYSTICAPNOS. See *Fumaria*.

CYTISO GENISTA. See *Spartium*.

CYTISUS. *Lin. Gen. Plant.* 785. *Tourn. Inst. R. H.* 647. Base Tree Trefoil, in French, *Citise*.

The Characters are,

It hath a Butterfly Flower, with a short Bell-shaped Empalement of one Leaf, divided in 2 Lips, the upper being bifid and acute, the under indented in 3 Parts. The Standard of the Flower is rising, oval, and reflexed on the Sides. The Wings are obtuse, erect, and the Length of the Standard. The Keel is bellied and acute. It hath 10 Stamens, 9 joined, and one standing separate, terminated by rising Summits. It hath an oblong Germen, supporting a single Style, crowned by an obtuse Stigma. The Germen becomes an oblong blunt Pod, narrow at the Base, filled with Kidney-shaped flated Seed.

The Species are,

1. *CYTISUS foliis oblongo-ovatis, racemis brevioribus pendulis, caule arboreo.* *Cytisus* with oblong oval Leaves, short Spikes of Flowers hanging downward, and a Tree-like Stalk. This is the *Cytisus Alpinus latifolius, flore racemoso pendulo.* *Tourn. Inst. R. H.* 648. Broad leaved *Cytisus* of the Alps, with pendulous Bunches of Flowers, commonly called *Laburnum*.

2. *CYTISUS foliis ovato-lanceolatis, racemis longioribus pendulis, caule fruticoso.* *Cytisus* with oval Spear-shaped Leaves, long pendulous Bunches of Flowers, and a shrubby Stalk. This is the *Cytisus Alpinus angustifolius, flore racemoso pendulo longiore.* *Tourn.* Narrow leaved *Cytisus* of the Alps, with longer pendulous Bunches of Flowers, commonly called long spiked *Laburnum*.

3. *CYTISUS racemis simplicibus erectis, foliis ovato-oblongis.* *Hort. Cliff.* *Cytisus* with single erect Bunches of Flowers, and oval oblong Leaves. This is the *Cytisus glaber nigricans.* *C. B.* Blackish smooth *Cytisus*.

4. *CYTISUS villosus, foliis cuneiformibus perennantibus, caulibus ramosis.* Hairy *Cytisus* with Wedge-shaped small Leaves, which are perennial, and very branching Stalks. This is the *Cytisus Canariensis, sempervirens & incanus.* *Hort. Amst.* 2. 103. Evergreen hoary *Cytisus* of the Canary Islands.

5. *CYTISUS racemis erectis, calycibus bracteâ triplici auctis, foliis floralibus sessilibus.* *Lin. Sp. Plant.* 739. *Cytisus* with erect Bunches of Flowers, 3 Laminæ under the Empalement, and the Leaves on the Flower Branches fitting close. This is the *Cytisus glabris, foliis subrotundis, pediculis brevissimis.* *C. B. P.* 390. Smooth *Cyti-*

sus with roundish Leaves, and very short Foot Stalks, commonly called by Gardeners, *Cytisus secundus Clusii*.

6. *CYTISUS birsutus, foliolis ovatis, floribus lateralibus, caule erecto fruticoso.* Hairy *Cytisus* with small oval Leaves, Flowers proceeding from the Sides of the Branches, and an upright shrubby Stalk. This is the *Cytisus birsutus.* *J. B.* 1. 372. Hairy *Cytisus*, commonly called Evergreen *Cytisus* of Naples.

7. *CYTISUS floribus subsessilibus, foliis tomentosis, caulibus herbaceis.* *Lin. Sp. Pl.* 740. *Cytisus* with Flowers fitting close to the Branches, woolly Leaves, and an herbaceous Stalk. *Cytisus humilis argenteus angustifolius.* *Tourn.* Low silvery *Cytisus* having narrow Leaves.

8. *CYTISUS floribus capitatis, ramis decumbentibus.* *Prod. Lryd.* 376. *Cytisus* with Flowers collected in Heads, and Branches lying on the Ground. This is the *Cytisus supinus foliis infra & siliquis molli lanugine pubescentibus.* *C. B. P.* 390. Low *Cytisus* with the under Side of the Leaves, and Pods covered with a soft Down.

9. *CYTISUS Monspelulanus, medicæ folio, siliquis dense congestis & villosis.* *Tourn. Inst.* 648. *Cytisus* of Montpellier with a medick Leaf, and hairy Pods collected in thick Bunches.

10. *CYTISUS ramis humifusis albidis, floribus capitatis terminalibus, foliolis ovalibus glabris aggestis.* *Sauv. Monsp.* *Cytisus* with prostrate Branches, which are white; Flowers collected in Heads, terminating the Branches, and small, oval, smooth Leaves growing in Clusters. This is the *Cytisus foliis incanis angustis quasi complicatis.* Hoary narrow leaved *Cytisus* with complicated Leaves.

11. *CYTISUS caule erecto fruticoso, ramoso foliolis ovatis glabris, floribus capitatis terminalibus.* *Cytisus* with a shrubby erect branching Stalk, oval, smooth Leaves, and Flowers collected in Heads terminating the Branches. The Siberian *Cytisus*.

12. *CYTISUS floribus capitatis, foliolis ovato-oblongis, caule fruticoso.* *Cytisus* with Flowers collected in Heads, oblong oval Leaves, and a shrubby Stalk, commonly called Tartarian *Cytisus*.

13. *CYTISUS caule erecto fruticoso, foliolis cuneiformibus emarginatis, floribus simplicibus alaribus.* *Cytisus* with a shrubby erect Stalk, Wedge-shaped Leaves, which are indented, and single Flowers growing on the Sides of the Branches.

14. *CYTISUS foliis lanceolato-linearibus tomentosis, floribus spicatis alaribus pedunculis longissimis.* *Cytisus* with narrow Spear-shaped woolly Leaves, Flowers growing in Spikes from the Sides of the Branches, and very long Foot Stalks. This is the *Cytisus Africanus birsutus, angustifolius.* *Olden.* Hairy narrow leaved African *Cytisus*.

15. *CYTISUS racemis lateralibus strictis, ramis angulatis, foliolis cuneiformibus.* *Lin. Sp. Plant.* 740. *Cytisus* with lateral Bunches of Flowers, angular Branches, and Wedge-shaped small Leaves. This is the *Cytisus Æthiopicus, subrotundis incanis minoribus foliis, floribus parvis luteis.* *Pluk. Alm.* 128. *Æthiopian Cytisus* with smaller, roundish, hoary Leaves, and a small yellow Flower.

16. *CYTISUS racemis axillaribus erectis, foliolis sublanceolatis tomentosis, intermedio longius petiolato.* *Flor. Zeyl.* *Cytisus* with erect Spikes of Flowers proceeding from the Sides of the Branches, and woolly Spear-shaped Leaves, the Foot Stalk of the middle one being the longest. This is the *Cytisus arborescens, fructu eduli albo.*

Plum.

Plum. Cat. 19. Tree *Cytisus* with white eatable Fruit, commonly called Pigeon Pea in *America*.

The 1st Sort is the common broad leaved *Laburnum*, which was formerly in greater Plenty in the *English* Gardens than at present; for since the 2d Sort hath been introduced, it has almost turned this out; the Spikes of Flowers being much longer, they make a finer Appearance when they are in flower, which has occasioned their being more generally cultivated; but the 1st grows to be the largest Tree, and the Wood of it is very hard, of a fine Colour, and will polish very well; it approaches near to green Ebony, so is by the *French*, titled, Ebony of the *Alps*, and is there used for many Kinds of Furniture; but in *England* there are few of these Trees which have been suffered to stand long enough to arrive to any considerable Size; for as they have been only considered as an ornamental Tree, the frequent Alterations which most of the Gardens in *England* have undergone, have occasioned their being rooted out; but in some of the old Gardens in *Scotland*, where they have been permitted to stand, there are large Trees of this Kind, which are fit to cut down for the use of the Timber. I have seen two old Trees of it in Gardens, which were more than a Yard in girth, at 6 Feet from the Ground, and these had been broken and abused, otherwise might have been much larger. They grow very fast, and are extremely hardy, so may be well worth propagating upon poor shallow Soils, and in exposed Situations. His Grace the Duke of *Queensberry* sowed a great Quantity of the Seeds of this Tree, upon the Side of the Downs, at his Seat near *Amesbury*, in *Wiltshire*, where the Situation was very much exposed, and the Soil so shallow, that few Trees would grow there, yet in this Place the young Trees were 12 Feet high in 4 Years Growth, so became a Shelter to the other Plantations, for which they were designed; but the Hares and Rabbits are great Enemies to these Trees, by barking them in Winter, so that where they are cultivated, they should be fenced from these Animals.

Both these Sorts are easily propagated by Seeds, which the Trees produce in Plenty; if these are sown upon a common Bed of Earth in *March*, the Plants will appear by the Middle or End of *April*, and require no Care but to be kept clean from Weeds during the following Summer; if the Plants are too close together, they may be transplanted the Autumn following, either into a Nursery for a Year or two to get Strength, or into the Places where they are designed to remain; where People would cultivate them for their Wood, it will be the best Way to sow the Seeds upon the Spot where they are intended to grow, because these Trees send out long thick fleshy Roots to a great Distance, which will penetrate Gravel or Rocks, and if these Roots are cut or broken, it greatly retards their Growth; therefore when they are not sown upon the intended Spot, they should be transplanted thither young, otherwise they will not grow to near the Size; though where they are only designed for Ornament, the removing the Plants twice will stop their Growth, and cause them to be more productive of Flowers; but all Trees intended for Timber, are much better sown on the Ground, than if they are transplanted.

If the Seeds of these Trees are permitted to scatter in Winter, the Plants will rise in great Plenty the follow-

ing Spring, so that a few Trees will soon supply any Person with a sufficient Number of Plants.

These Trees flower in *May*, and make a fine Appearance, their Branches being loaded with long Strings of yellow Flowers, which hang down from every Part. The Seeds grow in long Pods and ripen in Autumn. There is a Variety of both these Trees with variegated Leaves, which some are fond of cultivating; this is only done by Cuttings or Layers, for the Seeds of these will produce Plants with green Leaves; the Cuttings should be planted in Autumn, when the Leaves begin to fall, and the Plants must have a poor Soil, for in good Ground they are apt to become plain.

If the 1st Sort is considered as a useful Wood which there is no Reason to doubt, it may be planted in large Clumps in Parks, and will be very ornamental there; I am certain, from long Experience, that this Tree, will thrive upon many Soils, and in such Situations as few other Trees will make any Progress; the Objection to fencing is the same here, as for any other Trees, for no Plantation, if not well secured from Animals, will answer the Design of the Planter.

The 2d Sort differs from the 1st, in having narrower Leaves, longer Bunches of Flowers, and the Trees do not grow so large and strong, this Difference I find is constant from Seed. There is another Sort mentioned by *Tournefort*, with shorter Bunches of Flowers, one Tree of which Kind I thought I had found in a Garden; the Bunches of the Flowers upon this Tree were close and almost round; but I sowed the Seeds of it, and the Plants proved to be only the common Sort.

The 3d Sort grows naturally in *Austria*, *Italy* and *Spain*, and at present is rare in the *English* Gardens; it was formerly in some curious Gardens here, but had been long lost, till a few Years ago, when I procured the Seeds from Abroad, which succeeded in the *Chelsea* Garden, where the Plants have flowered and produced ripe Seeds, which have been communicated to the curious.

This Shrub seldom rises more than 3 or 4 Feet high in *England*; it naturally puts out many lateral Branches near the Ground, which spread out on every Side, so as to form a low shrubby Bush, so is with Difficulty raised to a Stem: The Branches are very slender, and their Ends are frequently killed if the Winter is severe; these are garnished with oblong, oval Leaves, growing by Threes on each Foot Stalk; they are equal in Size, and of a dark green Colour; the Branches grow erect, and are terminated by Spikes of yellow Flowers, about 4 or 5 Inches in Length, standing upright, and as all the Branches are thus terminated, so when the Shrubs are in flower, they make a fine Appearance; it flowers in *July*, after most of the other Sorts are past, and the Seeds ripen in Autumn. This is propagated by Seeds, which should be sown on a Bed of light Earth in *March*, covering them about one 3d of an Inch with fine screened Mould; in the Beginning of *May* the Plants will appear, when they must be carefully weeded, and during the following Summer constantly kept clean, which is all the Culture they require till Autumn, when it will be very proper to arch the Bed over with Hoops, that in frosty Weather, the Plants may be covered with Mats, to prevent their tender Shoots from being killed; for as these

these young Plants are apt to continue growing later in the Autumn, than those which are become woody, they are much more susceptible of Cold, [therefore where there is not some Care taken to cover them, if the Winter should prove severe, many of them may be entirely destroyed, and the others killed to the Ground. The Spring following, after the Danger of hard Frost is over, the Plants should be carefully taken up, and planted out at the Distance of one Foot, Row from Row, and six Inches asunder in the Rows, this should be in a sheltered Situation, and as these Plants do not shoot till late in the Spring, they need not be transplanted before the End of *March*, or Beginning of *April*, and if the Season should then prove warm and dry, it will be proper to give the Plants some Water to settle the Earth to their Roots, and if the Drought continue, and the Waterings are 3 times repeated at a Week's Interval from each, it will be of Service to the Plants. After they have taken new Root, they require no farther Care, but to keep them constantly clean from Weeds, in this Nursery the Plants may remain two Years, in which Time they will have acquired Strength enough to be transplanted where they are to remain.

This Shrub is exhibited in my Figures of Plants, No. 117.

The 4th Sort grows naturally in the *Canary Islands*, from whence the Seeds were first brought to *England*; this being a Native of warm Countries, is too tender to live through the Winter in the open Air here, but requires only the Shelter of a Green-house, and will thrive where *Myrtles* and *Amomum Plinii* do well. This is a very bushy Shrub, which rises with tough pliable Stalks to the Height of 8 or 10 Feet, sending out many slender hairy Branches, very closely garnished with small Wedge-shaped Leaves, placed by three on each Foot Stalk, these are of a dark green and very hairy; the Branches are terminated by close short Bunches of bright yellow Flowers, these come out in *May*, and are frequently succeeded by short hairy Seed Pods, which ripen in *August*.

It is propagated by Seeds, which should be sown upon a very temperate hot Bed in *March*, which will bring up the Plants in a short Time; in 3 Weeks after they may be transplanted, each into a small Halfpenny Pot, filled with light Earth, and plunged into a moderate hot Bed, just to forward their taking fresh Root; then they should be inured gradually to the open Air, and the Middle or latter End of *May*, placed abroad in a sheltered Situation, and afterward treated in the same Way, as other hardy Kinds of Green-house Plants.

The 5th Sort grows naturally in the South of *France*, *Spain*, and *Italy*, but has been long cultivated in the Nursery Gardens, as an ornamental flowering Shrub by the Title of *Cytisus secundus Clusii*, which is a great Mistake, for the 10th Species here enumerated, is the 2d of *Clusius*. This rises with a woody Stalk, putting out many Branches which are covered with a brownish Bark, and garnished by obverse oval small Leaves growing by Threes on very short Foot Stalks. The Flowers are produced in close short Spikes at the End of the Branches, they are of a bright yellow and appear in *June*, these are succeeded by short broad Pods, which contain one Row of Kidney-shaped Seeds, which ripen in *August*. These Shrubs will rise to the Height of 7 or 8 Feet,

and become very bushy, they are very hardy, so will thrive in any Situation, and on almost any Soil, which is not too wet. They are propagated by Seeds, which may be sown on a common Bed of light Earth in Spring, and kept clean from Weeds the following Summer; in Autumn the Plants may be transplanted into a Nursery in Rows, one Foot apart, and at 6 Inches Distance in the Rows, where they may remain two Years to acquire Strength, and should then be removed to the Places where they are designed to grow.

The 6th Sort hath a soft shrubby Stalk, dividing into many Branches, which grow erect, and frequently rise to the Height of 8 or 10 Feet; the Stalks and Leaves are very hairy, the Leaves are oval, growing 3 upon each Foot Stalk, and are placed closely on the Branches; the Flowers come out from the Side of the Stalk, in short Bunches; they are of a pale yellow, appear in *June*, and succeeded by long narrow, hairy Pods, with one Row of Kidney-shaped Seeds, which ripen in *September*.

This Sort, of late Years, has been much cultivated in the Nursery Gardens near *London*, by the Title of evergreen *Cytisus* of *Naples*; but in severe Frost these Shrubs are killed, so they are not proper for every Situation, therefore should only be planted on a dry Soil, and in warm Situations; they are also very difficult to remove when grown to any Size, for they shoot long Roots deep into the Ground, and when these are broken, the Plants seldom survive. This may be propagated as hath been directed for the 3d Sort. It grows naturally in the South of *France*, in *Spain* and *Italy*.

The 7th Sort grows naturally in the South of *France*, and in *Italy*; I received it from *Verona*, near which it grows in Plenty. This is a low perennial Plant, and puts out several weak Stalks from the Root, which spread on the Ground, and are from 6 to 8 Inches long, garnished with small silvery Leaves growing by Threes; The Flowers are produced at the End of the Stalks, two or three growing together upon short Foot Stalks; they are of a pale yellow, and appear in *July*; but unless the Season proves very warm, they do not produce Seeds in *England*. It is propagated by Seeds sown in Spring in a warm Border, where the Plants are to remain; for as they have commonly one downright Root, they seldom live if transplanted. The Plants require no Culture but to keep them clean from Weeds; they flower the second Year.

The 8th Sort grows naturally in *Sicily*, *Italy*, and *Spain*; this is a perennial Plant, from whose downright Root, proceed several weak Branches, which trail on the Ground, and extend to the Length of 8 or 10 Inches; these are garnished with oblong Leaves, placed by Threes upon pretty long Foot Stalks; they are hoary on their under Side, but smooth above; the Flowers are collected in Heads, at the End of the Stalks, having a Cluster of Leaves under them; they are of a deep yellow Colour, and appear the latter End of *June* in warm Seasons; these are succeeded by flat woolly Pods, containing one Row of small Kidney-shaped Seeds, which ripen in *September*. This Plant is propagated by Seeds, which should be sown where they are to remain, and treated as the 7th Sort.

The 9th Sort grows naturally about *Montpelier*; this rises with an upright Stalk 4 or 5 Feet high, sending out

out many Side Branches, which are streaked or furrowed; these are garnished with oval hairy Leaves; the Flowers are produced on the Side of the Stalks, of a bright yellow; they appear in *June*, and are succeeded by hairy Pods, which ripen in *September*. This may be propagated in the same Manner as the 3d Sort.

The 10th Sort grows naturally about *Montpelier*; this is a perennial Plant, with a strong downright Root, sending out many tough ligneous Branches, which spread flat on the Ground, and extend to a Foot and a Half in Length, having a white Bark, dividing into many smaller; these are garnished by very small Trefoil Leaves sitting close to the Branches, the Flowers are produced at the Extremity of the Branches, 3 or 4 together; they are but small, and of a deep yellow inclining to an Orange Colour. These appear in *July*, and in very warm Seasons, are succeeded by short Pods, containing 3 or 4 Kidney-shaped Seeds in each. This Sort is propagated as the 7th.

The 11th Sort came originally from *Siberia*; this is a low Shrub, which seldom rises more than 3 Feet high in *England*, sending out many Side Branches, garnished by oval smooth Leaves, having pretty long Foot Stalks; the Flowers are produced in Clusters or Heads at the End of the Branches; these are of a bright yellow, and appear the End of *March*, or Beginning of *April*, but are seldom succeeded by Pods in *England*. This is propagated by Seeds as the other Sorts, but requires a cool Situation; for the Plants are subject to shoot upon the first mild Weather in *February*, and so are often cut down by the Frosts in *March*, which sometimes kills the Shoots down to the old Wood.

The 12th Sort grows naturally in *Tartary*, and the Seeds were sent to the Imperial Garden at *Peterburgh*, from whence many of the curious Gardens in *Europe* have been furnished with them. This hath a Shrubby Stalk, which rises near 4 Feet high, dividing into many Branches with a green Bark, closely garnished by oblong oval smooth Leaves, of a hoary green Colour; the Flowers are produced in close Heads at the End of the Branches, having a Cluster of Leaves under them, they are of a bright yellow Colour, and appear in *May*; these are sometimes succeeded by short woolly Pods, containing 3 or 4 small Kidney-shaped Seeds in each. This is propagated by Seeds, which should be sown early in Spring, on a Border of strong Ground exposed to the East; for if they are sown where they have full Sun, the Plants will not thrive. This requires a cold Situation and a pretty strong Soil, otherwise it will not thrive.

The 13th Sort grows naturally about *Algiers*, from whence the Rev. Dr. *Shaw* brought the Seeds, which succeeded in the *Chelsea* Garden. This rises with a soft shrubby Stalk to the Height of 8 or 10 Feet, putting out many slender Branches on every Side; these are garnished with small Wedge-shaped Leaves, which

are indented at the Top, of a dark green and smooth; the Flowers come out single from the Side of the Branches, these are large and of a bright yellow; they appear in *June*, and are sometimes succeeded by Pods containing 3 or 4 Kidney-shaped Seeds, which ripen in Autumn. This Sort is too tender to live in the open Air through the Winter in *England*, therefore the Plants must be treated the same Way as the 4th Sort, and it is propagated by Seeds in the same Manner.

The 14th Sort grows naturally in *Africa*; this rises with weak Stalks about 5 Feet high, which send out a few Side Branches which grow erect, and are thinly garnished by narrow Spear-shaped Trefoil Leaves, woolly, and standing on long Foot Stalks; the Flowers grow in close Spikes, on long naked Foot Stalks, which arise from the Wings of the Leaves; they are small, of a deep yellow, and appear in *July*, but do not produce Seeds here. This requires the same Treatment as the former.

The 15th Sort grows naturally at the *Cape of Good Hope*; this rises with a weak shrubby Stalk near 6 Feet high, sending out weak angular Branches, like the common Broom; these are garnished by Wedge-shaped small Leaves growing by Threes. The Flowers come out in small slender Bunches from the Side of the Stalks, they are small, and of a pale yellow Colour. They appear in *June* and *July*, but are rarely succeeded by Pods here. This must be propagated and treated as the 4th Sort.

The 16th Sort grows naturally in the Islands of *America*; this rises with a shrubby Stalk 8 or 10 Feet high, sending out many Side Branches, garnished by Spear-shaped woolly Leaves, placed by Threes on each Pedicle; that in the Middle having a distinct Foot Stalk, the 2 Side Lobes growing close to the principal Foot Stalk. The Flowers come out from the Side of the Branches, sometimes single, at other Times in Clusters; they are of a deep yellow Colour, and about the Size of those of the common *Laburnum*; these are succeeded by hairy Pods about 3 Inches long, which are Sickle-shaped, ending with a long acute Point; these swell at the Place where each Seed is lodged, the Seeds are roundish, a little inclined to a Kidney Shape. These Seeds are esteemed an excellent Food for Pigeons in *America*, from whence it had the Title of Pigeon Pea.

This Plant grows only in very warm Countries, so cannot be preserved in *England*, unless placed in a warm Stove. It rises easily from Seeds in a hot Bed, and will grow 3 or 4 Feet high the first Year, provided they have a proper Heat, and the 2d Year they will produce Flowers and Seeds. The Plants must be placed in the Bark Bed in the Stove, and treated as other tender Plants from the same Countries: They should have but little Water in Winter, and in Summer a large Share of free Air admitted to them in warm Weather.

D.

D A L

DAFFODIL. See *Narcissus*.

DAISIES. See *Bellis*.

DALECHAMPIA. *Lin. Gen. Pl.* 1022. *Plum. N. G.*

D A L

So named by Father *Plumier*, in Honour of *Jacobus Dalechamp*, a curious Botanist.

The Characters are,

It hath male and female Flowers on the same Plant; the Flowers have a double Involucrum, composed of several narrow Leaves armed with stinging Hairs; the male Flowers have a rough Empalement of one Leaf, which is coloured; they have no Petals, but many Stamina which arise at different Times, terminated by Twin Summits. The female Flowers have a roundish three cornered Germen supporting one erect Style, divided into a Fork at the Top, in the Middle of which is situated the Stigma. The Germen becomes a round three cornered Capsule, which is smooth, having 3 Cells, each containing one roundish Seed.

We have but one Species of this in England, viz.

DALECHAMPIA foliis trilobis glabris, floribus axillaribus caule volubili. Dalechampia with smooth trifoliate Leaves, Flowers growing from the Sides of the Branches, and a twining Stalk. This is the Dalechampia scandens, lupuli foliis, fructu tricocco glabro, calyce hispido. Houst. Mss. Climbing Dalechampia with Hop Leaves, a three seeded smooth Fruit, and a rough Empalement.

This Plant grows naturally in Jamaica, from whence Dr. Houslon sent me the Seeds, which succeeded in the Chelsea Garden, where the Plants have flowered and perfected Seeds. This must be a different Plant from that which Plumier found growing in Martinico, or he has taken the Involucrum for the Seed Vessel by his Title of it, for he calls it *fructu tricocco hispido*; whereas this hath a smooth Fruit with a hispid Empalement.

It hath a Root composed of many Fibres, which extend to a great Distance, from which arise several weak twining Stalks, which fasten themselves to the neighbouring Plants, and mount up to a considerable Height; these are garnished at each Joint by one trifoliate Leaf, or more properly by a Leaf divided into 3 Lobes, for these are joined together at their Base; they are smooth, the 2 Side Lobes are oblique to the Mid-rib, but the middle one is equal. The Flowers are produced from the Side of the Stalks, 3 or 4 growing on each Foot Stalk; some of these are male, and others female; they are of an herbaceous Colour, and small, so make no Appearance; they have each a double Involucrum, made up of 2 Orders of Leaves, which are narrow, and armed with small bristly Hairs, which sting the Hands of those who unwarily touch them; the Flowers are succeeded by roundish Capsules, having 3 prominent Lobes which are smooth, each inclosing a single Seed.

This Plant is propagated by Seeds, which must be sown early in Spring on a hot Bed; when the Plants are 3 Inches high, they should be carefully transplanted, each into a small Pot filled with light rich Earth, and then plunged into a hot Bed of Tanners Bark, being careful to screen them from the Sun, until they have taken new Root; after which Time the Glasses of the hot Bed should be raised every Day, in Proportion to the Heat of the Weather, to admit fresh Air to the Plants; they must also be frequently watered, for they naturally grow in moist Places. When they have grown so large as to fill these Pots with their Roots, they should be removed into larger Pots, and placed in the Bark Bed in the Stove; where they must be supported either with Stakes, or a Trellis, round which they will twine, and rise to the Height of 8 or 10 Feet.

These Plants must be kept constantly in the Stove, for they are too tender to bear the open Air here, even in

the Summer Season; therefore they should be placed with Convolvuluses, and other twining Plants, near the Back of the Stove, where should be made an Espalier to support them; in which Situation they will thrive, and produce Flowers, and sometimes perfect Seeds in this Country; but, in order to this, they should have a large Share of fresh Air in warm Weather, by drawing down the upper Glasses of the Stove; in Winter the Stove should be kept to a temperate Heat, or rather higher. In Summer they will require a large Share of Water, but in Winter it should be given to them in less Quantities, but must be frequently repeated. These Plants do not continue above 2 or 3 Years, so young Plants should be raised to preserve the Kind.

DAMASONIUM, Star-headed Water Plantain.

The Characters are,

It hath a Flower composed of 3 Leaves, which are placed orbicularly, and expand in Form of a Rose: Out of the Flower Cup rises the Pointal, which afterward becomes a Star-shaped Fruit, with many Cells, full of oblong Seeds.

The Species are,

1. **DAMASONIUM stellatum**, Lugd. Star-headed Water Plantain.

2. **DAMASONIUM Americanum maximum**, plantaginifolio, flore flavescens, fructu globoso. Plum. Greatest American Water Plantain, with a Plantain Leaf, a yellowish Flower, and a globular Fruit.

The first of these Plants is a Native of England; it grows commonly in standing Waters, which are not very deep. It is sometimes used in Medicine, but never cultivated in Gardens, so must be gathered for Use in the Places of its Growth.

The 2d Sort grows in Jamaica, Barbadoes, and the warm Parts of America, where it is generally found in stagnating Waters, and swampy Places; so that it would be difficult to preserve it in England, for it will not live in the open Air, and requires a Bog to make it thrive; but as it is a Plant of no great Beauty or Use, it is not worth cultivating in this Country.

DANDELION. See Leontodon.

DAPHNE. Lin. Gen. Pl. 436. *Thymelæa*. Tourn. Infl. Spurge Laurel, or Mezereon, in French Garou.

The Characters are,

The Flower hath no Empalement, it is cylindrical, of one Petal, cut into 4 Parts at the Top, where it spreads open; it hath 8 short Stamina inserted in the Tube, which are alternately lower, terminated by erect bilocular Summits. The oval Germen situated at the Bottom of the Tube, is crowned by a beaded depressed Stigma; the Germen becomes a roundish Berry with one Cell, inclosing one roundish fleshy Seed.

The Species are,

1. **DAPHNE racemis axillaribus, foliis lanceolatis glabris.** Lin. Sp. Plant. 357. Daphne with Bunches of Flowers proceeding from the Sides of the Branches, and smooth Spear-shaped Leaves. This is the *Thymelæa lauri folio sempervirens*, seu laureola mas. Tourn. Infl. 595. *Thymelæa* with an ever-green Bay Leaf, or male Laureola, commonly called Spurge Laurel.

2. **DAPHNE floribus sessilibus ternis caulinis, foliis lanceolatis deciduis.** Lin. Sp. Plant. 357. Daphne with three Flowers together sitting close to the Stalk, and Spear-shaped Leaves, which fall off in Autumn. This is the

Thymelæa lauri folio deciduo, five laureola fœmina. Tourn. Inst. 595. Thymelæa with a deciduous Bay Leaf, or female *Laureola*, commonly called *Mezereon*.

3. *DAPHNE floribus sessilibus axillaribus, foliis lanceolatis, caulibus simplicissimis. Lin. Sp. Plant. 356. Daphne* with Flowers sitting close to the Sides of the Branches, Spear-shaped Leaves, and single Stalks. This is the *Thymelæa foliis polygalæ glabris. C. B. P. 463. Thymelæa* with smooth Milkwort Leaves.

4. *DAPHNE floribus sessilibus aggregatis axillaribus, foliis ovatis utrinque pubescentibus nervosis. Lin. Sp. Plant. 356. Daphne* with Flowers in Clusters sitting close to the Sides of the Branches, and oval nervous Leaves covered with silky Hairs on both Sides. This is the *Thymelæa foliis candicantibus serici instar mollibus. C. B. P. 463. Thymelæa* with soft white Silk-like Leaves, commonly called *Tartan-raire*.

5. *DAPHNE floribus sessilibus aggregatis lateralibus, foliis lanceolatis obtusiusculis subtus tomentosis. Lin. Sp. Plant. 356. Daphne* with Clusters of Flowers growing close to the Sides of the Branches, and Spear-shaped blunt Leaves woolly on their under Side. This is the *Cbamelæa Alpina, folio infernè incano. C. B. P. 462. Alpine Cbamelæa* with Leaves hoary on their under Side.

6. *DAPHNE floribus congestis terminalibus sessilibus, foliis lanceolatis nudis. Lin. Sp. Plant. 357. Daphne* with Clusters of Flowers sitting close on the Tops of the Branches, and naked Spear-shaped Leaves. This is the *Cneorum. Matth. Hist. 46.*

7. *DAPHNE panicula terminali, foliis lineari-lanceolatis acuminatis. Lin. Sp. Plant. 357. Daphne* with a Panicle of Flowers terminating the Branches, and narrow Spear-shaped pointed Leaves. This is the *Thymelæa foliis lini. C. B. P. 463. Thymelæa* with Flax Leaves.

8. *DAPHNE floribus terminalibus pedunculatis, foliis sparsis linearibus patentibus mucronatis. Lin. Sp. Plant. 358. Daphne* with Flowers terminating the Branches, having Foot Stalks and narrow spreading acute pointed Leaves, placed scatteringly on the Branches. This is the *Thymelæa capitata lanuginosa, foliis creberrimis minimis aculeatis. Burm. Afr. 134. Tab. 49. fol. 1. Thymelæa* with a woolly Head, and many small pointed Leaves.

9. *DAPHNE foliis linearibus acutis, floribus racemosis axillaribus. Daphne* with very narrow acute Leaves, and Flowers growing in Bunches from the Sides of the Branches. This is the *Thymelæa frutescens rosmarini folio, flore albo. Plum. Cat. Shrubby Thymelæa* with a Rosemary Leaf and white Flower.

The 1st Sort grows common in the Woods in many Parts of *England*, and is commonly known by the Title of *Spurge Laurel*; of late Years the poor People get the young Plants out of the Woods, and carry them about Town to sell in the Winter and Spring. This is a low ever-green Shrub, which rises with several Stalks from the Root, to the Height of 2 or 3 Feet, dividing upward into several Branches, garnished with thick Spear-shaped Leaves, which come out irregularly on every Side, sitting pretty close to the Branches, they are smooth and of a lucid green; between these, toward the upper Part of the Stalks, come out the Flowers in small Clusters; they are of a yellowish green, and appear soon after *Christmas*, if the Season is not very se-

vere; these are succeeded by oval Berries, which are green till *June*, when they ripen and turn black, soon after which they fall off. The whole Plant is of a hot caustick Taste, burning and inflaming the Mouth and Throat. The Leaves continue green all the Year, so these Plants are ornamental in Winter; as they will thrive under tall Trees, are very proper to fill up the Spaces in Plantations.

The 2d Sort grows naturally in *Germany*, and there has been a Discovery made of its growing in some Woods near *Andover*, from whence a great Number of Plants have been taken of late Years. This has been long cultivated in the Nursery Gardens as a flowering Shrub, and is a very ornamental Plant in Gardens, very early in the Spring, before others make their Appearance. There are two distinct Sorts of this, one with a white Flower succeeded by yellow Berries, the other with Peach-coloured Flowers and red Fruit. These are by some supposed to be accidental Varieties arising from the same Seeds, but I have several Times raised these Plants from Seeds, and always found the Plants come up the same as those from which the Seeds were taken, therefore may be called different Species. There is a Variety of the Peach-coloured *Mezereon*, with Flowers of a much deeper Colour than the common, but these I have always found to vary in their Colours when raised from Seeds.

This Shrub grows to the Height of 5 or 6 Feet, with a strong woody Stalk, putting out many woody Branches on every Side, so as to form a regular Head; the Flowers come out very early in the Spring, before the Leaves appear, growing in Clusters all round the Shoots of the former Year; there are commonly 3 Flowers produced from each Knot or Joint, standing on the same short Foot Stalk; these have short swelling Tubes, divided into 4 Parts at the Top which spread open; they have a very fragrant Odour, so that where there are Plenty of the Shrubs growing together, they perfume the Air to a considerable Distance round them: after the Flowers are past, the Leaves come out, which are smooth, Spear-shaped, and placed without Order; they are about two Inches long, and three Quarters broad in the Middle, gradually lessening to both Ends; the Flowers are succeeded by oval Berries, which ripen in *June*; those of the Peach-coloured Flowers are red, and those of the white yellow. The Flowers appear in *February* and *March*, and sometimes in mild Winters they appear in *January*. This Plant was formerly used in Medicine, but as every Part of it has a hot caustick Taste, few prescribe the Use of it at present.

This is propagated by Seeds, which should be sown on a Border exposed to the East, soon after the Berries are ripe; for if they are not sown till Spring, they often miscarry, and always remain a Year in the Ground, before the Plants appear; whereas those that are sown in *August*, will grow the following Spring, so that a Year is saved, and these never fail. When the Plants come up, they require no other Care but to keep them clean from Weeds, and if the Plants are not too close together, they may continue in the Seed Bed, to have the Growth of two Summers, especially if they do not make great Progress the first Year; then at *Michaelmas*, when the Leaves are shedding, they should be carefully taken

taken up so as not to break or tear their Roots, and planted into a Nursery at about 16 Inches Row from Row, and 8 or 9 Inches asunder in the Rows, in this Nursery they may remain 2 Years, by which Time they will be fit to remove to the Places where they are designed to remain; the best Season to transplant these Trees is in Autumn, for as the Plants begin to vegetate very early in the Spring, it is not proper to transplant them at that Season. These Plants grow best in a light sandy Earth which is dry; for in cold wet Land they become mostly, and make little Progress, so that upon such Soils they never grow to any Size, and produce few Flowers.

Although the Berries of this Tree are so very acrid, as to burn the Mouth and Throat of those who may incautiously taste them, yet the Birds greedily devour them, as soon as they begin to ripen; so that unless the Shrubs are covered with Nets to preserve the Berries, they will all be destroyed before they are fit to gather. There are of this and the former Sort, some Plants with variegated Leaves, but the plain are much more beautiful.

The 3d Sort grows naturally in *Spain, Italy*, and the South of *France*, where it rises to the Height of 3 or 4 Feet, with a single Stalk covered with a light coloured Bark; the Flowers come out in Clusters on the Sides of the Stalks, of an herbaceous Colour, so make but little Appearance; they appear early in Spring, and are succeeded by small Berries which are yellowish when ripe.

The 4th Sort grows naturally in the South of *France*, from whence I received the Seeds. This is a low shrubby Plant, sending out several weak Stalks from the Root, which grow about a Foot long, and spread about irregularly, these are tough, stringy, and covered with a light Bark, the Leaves are small, of an oval Form and are very soft, white and shining like Satin; these sit pretty close to the Stalks; between these the Flowers come out in thick Clusters from the Side of the Stalks, they are white, and are succeeded by roundish Berries having one hard Seed. It flowers in *June*, but doth not ripen Seeds here.

The 5th Sort grows on the Mountains near *Geneva*, and in *Italy*, where it rises about 3 Feet high; the Flowers come out in Clusters from the Side of the Branches, early in Spring. The Leaves are Spear-shaped ending in blunt Points, and are hoary on their under Side. The Flowers are succeeded by small roundish Berries which turn red when ripe.

The 6th Sort grows naturally on the *Alps*, and the Mountains near *Verona*, from whence it was sent me; this is a very humble Shrub, seldom growing more than one Foot high with ligneous Stalks, which put out several Side Branches; these are garnished with narrow Spear-shaped Leaves placed round the Stalks without Order; the Branches are terminated by small Clusters of purple Flowers which stand erect, having no Foot Stalks, the Tubes of the Flowers are longer and narrower than those of the *Mezereon*, and the Mouth is cut into 4 acute Parts which are erect. These Flowers emit a pleasant Odour, and appear early in Spring, but do not produce Seeds here.

The 7th Sort grows naturally about *Montpelier*, this rises with a shrubby Stalk, about two Feet high, dividing

into many smaller Branches, which are closely garnished with narrow Spear-shaped Leaves ending in acute Points, these grow erect, the Ends of the Branches are terminated by Panicles of Flowers, which are much smaller than those of the *Mezereon*, having swelling Tubes, which are contracted at the Mouth. These appear in *June*, but are not succeeded by Seeds here.

The 8th Sort grows naturally at the *Cape of Good Hope*, this Shrub rises to the Height of 5 or 6 Feet, dividing upward into several Branches which grow erect, and are covered with a white Bark, these are very closely garnished with small narrow Leaves, which come out on every Side of the Branches without Order, spreading open, the Tops are terminated by woolly Heads, out of which the Flowers come in small Clusters; they are white, having oblong Tubes, divided into 4 obtuse Segments at the Mouth, which spread open. These Plants do not produce Seeds in *Europe*.

The 9th Sort grows naturally in many Islands in the *West-Indies*, it was sent me from *Antigua*. This Shrub rises to the Height of 4 or 5 Feet, with a woody Stalk, covered with a rugged Bark of an Ash Colour; the upper Part of the Branches are garnished with Leaves about the Size, and the same Form as those of *Rosemary*; between the Leaves, the Flowers come out in small Bunches upon Foot Stalks an Inch long; they have short Tubes, cut into 4 Parts at the Top, and are white; these are succeeded by small round Berries of a brown Colour when they are ripe.

The 3d, 4th and 7th Sorts are tolerable hardy, so will live through the Winters in *England* in the open Air, provided they are in a dry Soil and warm Situation. The 5th and 6th Sorts are as hardy as the common *Mezereon*, so are not in Danger of being hurt by Frost in *England*, but they are all very difficult to keep in Gardens, because neither of them will bear to be transplanted. I have several Times raised the Plants from Seeds, which have succeeded well in the Places where they were sown, but whenever they were removed, they certainly died though performed at different Seasons, and with the greatest Care, and the same has happened to every other Person who has raised any of these Plants; and some of my Correspondents have assured me, they have frequently attempted to remove these Plants from their natural Places of Growth, into their Gardens, and have chosen Plants of all Sizes from the youngest Seedlings to the oldest Plants, yet have never succeeded in it, though they have used their utmost Care, and have performed it at different Seasons. Therefore those who are desirous to have these Plants in their Gardens, must procure the Seeds from the Countries where they naturally grow, and when they arrive, they should be immediately sown where they are designed to remain, which for the 3d, 4th, and 7th Sorts, should be on a very warm dry Border, where, if there is a Foundation of Lime Rubbish or Chalk, under the upper Surface of the Ground, the Plants will thrive better and continue much longer, than in better Ground; all the Culture they require, is to keep the Place clean from Weeds, for the less the Ground is stirred near their Roots, the better the Plants will thrive; for they naturally grow on poor shallow Land, and out of Crevices in Rocks so the nearer the

Soil approaches to this, the more likely the Plants will be to succeed.

The 5th and 6th Sorts may have a cooler Situation; if these are sown where they may only have the Morning Sun, they will thrive better than in a warmer Situation, and the Ground near the Roots should not be disturbed, therefore in the Choice of the Situation, take care not to sow them near other Plants, which may require transplanting, or to have the Ground dug and loosened. The Seeds of these coming from distant Counties, rarely arrive here Time enough to sow in Autumn, so that when they are sown in Spring, the Plants do not appear till the succeeding Spring; and I have sometimes had the Seeds remain till the second Spring in the Ground, before the Plants have appeared, but as this may be too long for many People to leave the Ground undisturbed, they had better put the Seeds into small Pots of Earth, and bury them in the Ground the first Summer, and in Autumn take them up, and sow them where they are to stand; by this Method the Seeds will be prepared to vegetate the following Spring.

The 5th Sort is a beautiful sweet Shrub, so deserves a Place in Gardens, as much as any of those we cultivate for Ornament. The 1st and 2d Sorts are sometimes used in Medicine as before observed, but being of a very caustic Nature, are seldom prescribed, but if proper Trials were made with Caution, it is not doubted but they may be found very efficacious in many stubborn Disorders; for some very ignorant Quacks have performed great Cures with these Plants. The 7th Sort produces the *Grana nitida* of the Shops.

The 8th Sort grows naturally at the Cape of Good Hope, so will not live abroad in Winter in England, but requires a good Green-house to preserve it. This Plant is very difficult to keep or propagate in Gardens.

The 9th Sort will not thrive in England, unless preserved in the Bark Stove, this will not bear transplanting, for I raised several from Seeds which thrived pretty well while they continued in the Pot where they were sown, but when transplanted, they all decayed.

DATISCA. Lin. Gen. Plant. 1003. *Cannabina*. Tourn. Cor. 52. Bastard Hemp.

The Characters are,

They are male and female in different Plants, the male Flowers have an Empalement composed of 5 narrow, acute Leaves; these have no Petals, and scarce any visible Stamina, but have 10 Summits which are much longer than the Empalement. The female Flowers have no Petals, but the Empalements are the same as the male, having an oblong perovious Germen supporting 3 Styles, crowned by single Stigmas; the Empalement afterward becomes an oblong triangular Capsule, opening with 3 Valves, having one Cell filled with small Seeds adhering to the 3 Sides of the Capsule.

The Species are,

1. **DATISCA caule laevi.** Lin. Sp. Pl. 1037. *Datisca* with a smooth Stalk. This is the *Cannabina Cretica florifera* & *fructifera*. Tourn. Cor. 52. Bastard Hemp of Crete, flowering and fruitful.

2. **DATISCA caule hirsuto.** Lin. Sp. Plant. 1037. *Datisca* with a rough Stalk.

The 1st Sort grows naturally in Crete, and other eastern Countries; this hath a perennial Root, from which arise several herbaceous Stalks near 4 Feet high; these are garnished with winged Leaves placed alter-

nately, each being composed of 3 Pair of Lobes terminated by an odd one; these are 2 Inches long and half an Inch broad, ending in acute Points, they are deeply sawed on their Edges, and of a light green. The Flowers come out in long loose Spikes from the Side of the Stalks at the Wings of the Leaves, but having no Petals, make but a poor Appearance. The Summits of the male Flowers being pretty long, and of a bright yellow Colour, are the only visible Parts of the Flowers at any Distance.

The Flowers on the female Plants are succeeded by oblong, three cornered Capsules filled with small Seeds, which adhere to the 3 Valves. The Plants flower in June, and the Seeds ripen in September. The Stalks decay in Autumn and new arise in Spring.

This Sort may be propagated by parting the Roots in Autumn, when the Stalks decay (which is the best Time to transplant them) but they must not be parted too small; they may be planted in any open Beds, not under the Drip of Trees, and will require no other Culture, but to keep them clean from Weeds.

It may also be propagated by Seeds, but these should be taken from such Plants as grew near male Plants, otherwise they will not succeed; and if the Seeds are not sown in Autumn, they seldom grow the first Year. The seedling Plants when they rise, require no Care but to keep them clean from Weeds till Autumn, when they may be transplanted where they are to grow.

The 2d Sort grows naturally in Canada, and other Parts of North America. This differs from the former, in having hairy Stalks, which grow taller; the Leaves are larger, and do not stand so near each other on the Stalks. It is equally hardy with the 1st Sort, and may be propagated in the same Manner, but should have a more shady Situation, and a moister Soil.

DATURA. Lin. Gen. Plant. 218. *Stramonium*. Tourn. Inst. R. H. 118. Thorn Apple.

The Characters are,

The Flower is of one Petal which is Funnel-shaped, having a long cylindrical Tube, spreading open at the Top, which in some Species is pentangular, each Angle being pointed; the Empalement of the Flower is permanent, swelling in the Middle, 5 cornered, and tubulous; the Flower hath 5 Stamina, as long as the Empalement, terminated by oblong compressed Summits; it hath an oval Germen supporting an upright Style, crowned by a thick obtuse Stigma. The Germen becomes an oval Capsule divided into 4 Cells by a cross intermediate Partition, which are filled with Kidney-shaped Seeds adhering to the Partition.

The Species are,

1. **DATURA fructu rotundo erecto pericarpio spinoso.** *Datura* with a round erect Fruit having a prickly Cover. This is the *Stramonium fructu spinoso rotundo, flore albo simplicis*. Tourn. Inst. R. H. 118. Thorn Apple with a round prickly Fruit, and a single white Flower.

2. **DATURA fructu ovali erecto, pericarpio spinoso.** *Datura* with an oval erect Fruit and a prickly Cover. This is the *Stramonium fructu spinoso oblongo, flore violaceo*. Tourn. Inst. R. H. 119. Thorn Apple with an oblong prickly Fruit, and a Violet coloured Flower.

3. **DATURA caule tomentoso, calycibus bifidis cylindricis, floribus decangularibus, fructibus rotundis nutantibus.** *Datura* with a woolly Stalk, a cylindrical bifid Empalement,

a ten cornered Flower, and round nodding Fruit. *Stramonium folio hyoscyami, flore toto candido, fructu propendente rotundo, spinis innoxiiis ornato.* Boerb. Thorn Apple with a Henbane Leaf, a Flower wholly white, and a round hanging Fruit set with harmless Prickles.

4. *DATURA fructu rotundo nutante, pericarpio spinoso, spinis robustioribus.* *Datura* with a round nodding Fruit, having a prickly Cover, and very strong Spines. This is the *Stramonium ferox.* Bocc. 50. Rough Thorn Apple.

5. *DATURA fructu oblongo erecto, pericarpio spinoso.* *Datura* with an oblong erect Fruit having a prickly Cover. *Stramonium fructu oblongo spinoso flore albo.* Tourn. Thorn Apple with an oblong prickly Fruit and a white Flower commonly called *American Thorn Apple.*

6. *DATURA fructu rotundo nutante, pericarpio carnosio tuberculoso.* *Datura* with a round nodding Fruit, having a fleshy Cover full of Tubercles. This is the *Stramonium Ægyptiacum flore pleno, intus albo, foris violaceo.* Tourn. *Egyptian Thorn Apple* with a double Flower, white on the Inside and Violet coloured on the Outside.

7. *DATURA pericarpis inermibus nutantibus, caule arborico.* Lin. Sp. Plant. 179. *Datura* with a nodding Fruit having an unarmed Cover, and a Tree-like Stalk. This is the *Stramonoides arboricum, oblongo & integro folio, fructu levi, vulgò. Flori pondio.* Tree Thorn Apple with an entire Leaf and a smooth Fruit, commonly called *Hanging Flower by the Spaniards.*

The Sorts here enumerated are undoubted distinct Species, notwithstanding some late Writers have supposed Part of them to be only feminal Variations; for I have cultivated them above 30 Years, during which Time, I have never observed either of them to vary from one Sort to another; all the Difference which any of them have ever shewn, has been in the double Flowers becoming single, therefore I have omitted these and have only mentioned one with double Flowers, which sometimes changes to single, at other Times they are with double and treble Tubes, stretched out beyond each other like the Primroses called *Hose in Hose.* Therefore these Varieties should be only considered as one distinct Sort. There is also a double Flower of the 3d Sort, which is much esteemed by the Curious, but this frequently degenerates to have single Flowers, so is not to be mentioned as a distinct Species. I also raised another Sort from Seeds, which the late Dr. *Houfoun* sent me from *La Vera Cruz*, which approached near to the 3d Sort, but the lower Part of the Tube was of a Violet Colour, the upper was a pure white, but as the Plants decayed without producing good Seeds, so I had not Opportunity enough, to determine if it was a distinct Species.

The 1st Sort here enumerated, is the most common Sort of Thorn Apple, and was probably first introduced from *Italy* or *Spain* where it naturally grows, but it is now become so common about *London*, and other great Towns in *England*, as to appear like a native Plant, for there are few Gardens or Dunghills without this Plant in Summer, though it is only near such Places, where the Plants may have been cultivated first in Gardens, and wherever any of these Plants are permitted to seed, they will furnish a Supply of Plants for some Years, as they produce a vast Quantity of Seeds, some of which will lie Years in the Ground, and when turned up to the Air will vegetate.

This Sort seldom grows much more than 2 Feet high,

dividing into many strong irregular Branches which are hollow; these are garnished with large smooth Leaves divided into irregular Angles, and emit a foetid Odour. The Flowers come out first from the Divisions of the Branches, and afterward near the Extremities; they have long swelling Tubes, which are dilated at the Top into large pentagonal Brims, each Angle ending in a long Point or Ligula; these stand in long green five cornered Empalements, and are succeeded by large roundish Seed Vessels, covered with thick Thorns, divided by 4 Furrows, to which adhere the Partitions, which separate the 4 Cells, filled with black Kidney-shaped Seeds. It flowers in *July, August* and *September*, and the Seeds ripen in Autumn, which if permitted to scatter, will fill the Ground with Plants the following Years. There was formerly a cooling Ointment made with the Leaves of this Plant and Hogs Lard, which was greatly esteemed for Burns and Scalds.

The 2d Sort grows naturally in most Parts of *America*; I have frequently received the Seeds from the Islands in the *West-Indies*, also from the Northern Parts of *America.* This rises with a purple strong Stalk, to the Height of 4 or 5 Feet, dividing into many strong Branches, garnished with Leaves shaped somewhat like those of the former Sort, but larger, and have a greater Number of Angles and Laciniae on their Edges; the Flowers have longer Tubes, and are of a purple Colour; the Fruit is also much longer, and these Differences are permanent. This is equally hardy with the former, and if the Seeds are permitted to scatter, the Plants will become troublesome Weeds.

The 3d Sort hath a strong woolly Stem, which rises 3 Feet high, and divides into many Branches; these are woolly, as are also the Leaves and Empalement of the Flower; the Leaves are almost entire, having only 2 or 3 slight Indentures on their Edges; the Flowers have very long Tubes, which extend beyond the bifid Empalement, then they spread out very broad, where the Brim is divided into 10 obtuse Angles; they are of a pure white above, but the Tubes have a Tincture of green within. These are succeeded by roundish Fruit, closely covered with long soft Thorns, they are divided into 4 Cells as the other, but the Seeds of this are of a light brown Colour when ripe.

This Plant is not so hardy as the others, so the Seeds must be sown on a gentle hot Bed in Spring, and the Plants afterward treated as the *Marvel of Peru* and other hardier Kinds of annuals, and may be transplanted into the full Ground the latter End of *May.* They will flower in *July*, and the Seeds will ripen in Autumn.

The 4th Sort is of humbler Growth, seldom rising more than a Foot and Half high, spreading out into many Branches, garnished with Leaves somewhat like those of the first Sort but smaller, and stand on longer Foot Stalks; the Flowers are like the first Sort, but smaller; the Fruit is round, and armed over with very strong sharp Thorns. The Seeds are black when ripe.

This Sort is too tender to be sown in the full Ground in *England*, so the Plants should be raised on a hot Bed, and afterward transplanted into Borders as the third.

The 5th Sort grows naturally in *North America*; this resembles the first Sort while young, but afterward greatly differs from it; the Stalks of this rise 4 or 5 Feet

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Feet high, are very smooth, of a light lucid green, as are also the Leaves; the Flowers are longer, and have a greater Resemblance to those of the 2d Sort. These Differences have always continued for above 30 Years, where it had been carefully cultivated. It is equally hardy with the first, so will propagate itself in Plenty, where it remains to ripen Seeds.

The 6th Sort grows naturally in *Egypt*, and *India*; this rises with a fine polished purple Stalk, 4 Feet high, dividing into several Branches, garnished with large, smooth, sinuated Leaves, standing on pretty long Foot Stalks. The Flowers are produced at the Divisions of the Branches; these have large swelling Tubes, which expand very broad at Top, their Brims being divided into 10 Angles, each ending with a long slender Point. The Flowers are of a beautiful purple on their Outside, and a fatty white within, some of these are single, others have 2 or 3 Flowers standing one within another, and some are double, having 4 or 5 Petals within each other of equal Length, so as to appear a full Flower at the Brim; they have an agreeable Odour at first, but if long smelt to, become less agreeable, and are narcotick. If these Plants are brought forward on a hot Bed in Spring, and in *June* planted out on a warm Border of rich Earth, they will flower very finely in *July* and *August*, but unless they are covered with Glasses, the Seeds seldom ripen well in *England*. The Fruit is round, and grows nodding downward; the Seed Vessel is thick and fleshy, as are also the intermediate Partitions which divide the Cells. The Outside of the Fruit is covered with blunt Protuberances, and the Seeds are of a bright brown Colour when ripe.

The 7th Sort was sent me from *La Vera Cruz*, where it grows naturally; this rises with a woody Stalk to the Height of 12 or 14 Feet, dividing into several Branches, garnished with oblique Leaves, 6 Inches long and 2 and a Half broad in their broadest Part, growing narrower at each End; they are oblique to the Foot Stalk, which stands nearer to one Side than the other; they are downy, and stand on long Foot Stalks. The Flowers come out at the Division of the Branches; these have a loose tubular Empalement, near 4 Inches long, which opens at the Top on one Side like a Spatha, or Sheath, within the Empalement; the Tube of the Flower is narrow, but immediately above it swells very large for near 6 Inches in Length, then spreads open at the Brim, where it is divided into 5 Angles, which terminate in very long Points; they are white, with some longitudinal Stripes, of a pale yellow on their Outside; these are succeeded by round smooth Capsules, filled with Kidney-shaped Seeds.

This Tree is one of the greatest Ornaments to the Gardens in *Chili*, where the Inhabitants propagate it with great Care; when the Flowers are fully blown, they make a fine Appearance, and a single Tree will perfume the Air of a large Garden.

This Plant is tender, so requires to be kept in a Stove in *England*; the Seeds of this must be procured from the Places where the Trees grow naturally; they should be perfectly ripe when gathered, and carefully put up, that the Vermin cannot get to them to destroy them. Most of the Seeds sent me, were devoured in their Passage by Insects, so but few Plants were raised; there were 2 or

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3 raised in the Gardens of the late Lord *Petre*, and 2 in the *Chelsea* Garden, one of which came so far as to flower, but perished without producing Seeds, so that at present I believe there are not any of the Plants in *England*.

DAUCUS. *Lin. Gen. Pl.* 296. *Tourn.* The Carrot.

The Characters are,

It hath an umbelliferous Flower, the principal Umbel is composed of a great Number of small one, called Rays, which are short, and in Clusters. The Involucrum of the principal Umbel is composed of many narrow Leaves, having winged Points; these are scarce so long as the Umbel; those of the Rays are shorter and simple. The Flowers have 5 Heart-shaped Petals, which turn inward; those which compose the Rays are unequal in Size, but those of the Disk are nearly so; these have each 5 hairy Stamina, terminated by roundish Summits. The Germen sits under the Flower, supporting two reflexed Styles, crowned by obtuse Stigmas. The Germen becomes a small roundish striated Fruit, dividing in two Parts, each having a single Seed, convex and furrowed on one Side, and plain on the other.

The Species are,

1. DAUCUS *feminibus bispidis, radice tenuiore servido.* Carrot with a prickly Seed, and a slender hot Root. The *Daucus vulgaris*. *Clus.* Common wild Carrot.

2. DAUCUS *feminibus bispidis, radice carnofo esculento.* Carrot with a prickly Seed, and a fleshy eatable Root. This is the *Daucus sativus, radice aurantii coloris.* *Tourn.* Manured Carrot, commonly called Orange Carrot.

3. DAUCUS *radiis involucri planis, laciniis recurvis.* *Prod. Leyd.* 97. Carrot with plain Rays to the Involucrum and recurved Jags. This is the *Daucus maritimus lucidus.* *Tourn.* Shining maritime Carrot.

4. DAUCUS *caule bispido, segmentis foliorum latioribus.* Carrot with a prickly Stalk, and broader Segments to the Leaves. This is the *Pastinaca Oenanthes folio.* *Bocc. Rar. Pl.* 75. Parsnep with a Water Dropwort Leaf.

5. DAUCUS *radiis involucri pinnatifidis, umbellis duplo longioribus, foliolis acutis.* Carrot with Wing-pointed Rays to the Involucrum, which are twice the Length of the Umbel, and acute Leaves. *Daucus tenuifolius Creticus, radiis umbellae longioribus.* *Tourn.* Narrow leaved Carrot of *Crete*, with Rays longer than the Umbel.

6. DAUCUS *radiis involucri pinnatifidis foliis radicalibus inciso obtusis, caulinis acutioribus.* Carrot with Wing-pointed Rays to the Involucrum, lower Leaves cut into obtuse Segments, and those on the Stalks very acute. This is the *Daucus maritimus annuus, foliis petroselinii latioribus & incis.* *Tilli. Hort. Pis.* Annual Sea Carrot with broad Parsley Leaves, cut into acute Segments.

7. DAUCUS *feminibus nudis.* *Hort. Cliff.* 89. Carrot having naked Seeds. This is the *Gingidium umbellae oblonga.* *C. B. P.* 151. *Gingidium* with an oblong Umbel.

The 1st Sort is the common wild Carrot, which grows by the Side of Fields, and in Pasture Grounds in many Parts of *England*. The Plants of this Sort do not differ greatly in Appearance from the Garden Carrot, which has led some Persons into an Opinion of their being the same, but those who have attempted to cultivate the wild Sort, are fully convinced of their being distinct Plants. I have tried to cultivate the wild Sort for many Years, but could never get the Seeds which were sown in the Spring to grow, upon which I sowed the

the Seeds in Autumn, Part of which have come up well; these Plants I cultivated in the same Manner as the Garden Carrot, but could not improve the Roots in the least, for they continued to be small, sticky, and of a hot biting Taste; and this has been always the Case, wherever the Plants have been sown; therefore there can be no Doubt of their being different Plants. The Seeds of this Sort are used in Medicine, and esteemed good to bring away Gravel; it is an excellent Diuretic, but instead of these Seeds, the Shops are usually supplied with old Seeds of the Garden Carrot, when they have lost their vegetative Quality, then the Seedsmen sell them to the Druggists for medicinal Use, but certainly all Seeds which are too old to grow, can have but little Virtue remaining in them.

There are several Varieties of the Garden Carrots, which differ in the Colour of their Roots, and these Variations may be continued, where there is proper Care taken to mix the different Sorts together in the same Garden; but the Orange Carrot is generally esteemed in London, where the yellow and the white Carrots are seldom cultivated.

The dark red, or purple Carrot, I take to be a distinct Sort, but as it is much tenderer, I have not had an Opportunity of seeing it in Flower, for the Roots were all destroyed by the first Frosts in Autumn. The Seeds of this Sort were sent from *Aleppo*, which succeeded very well, the Roots were not so large as those of the other Sorts of Carrots, and were of a purple Colour, very like that of a deep coloured Radish, they were very tender and sweet, the Leaves were finer cut than those of the common Carrot, and less hairy.

The 2d Sort is commonly cultivated in Gardens for the Kitchen; and the different Varieties of it are, in some Places, esteemed, though in London the Orange Carrot is preferred to all the other.

They are propagated at 2 or 3 different Seasons, or sometimes oftener, where People are fond of young Carrots, whenever they can be procured. The first Season for sowing the Seeds is soon after *Christmas*, if the Weather is open, which should be in warm Borders, near Walls, Pales, or Hedges, but they should not be sown immediately close thereto; but a Border of Lettuce, or other young Salad Herbs, of about a Foot wide, should be next the Wall, &c. for if the Carrots were sown close to the Wall, they would draw up weak, without making any tolerable Roots.

These delight in a warm light sandy Soil, which should be dug pretty deep, that the Roots may the better run down; for if they meet with any Obstruction, they are very apt to grow forked, and shoot out lateral Roots, especially where the Ground is too much dunged the same Year that the Seeds are sown, which will also occasion their being Worm-eaten; it is therefore the better Method to dung the Ground for Carrots, the Year before they are sown, that it may be consumed, and mixed with the Earth; but in such Places where there has not been Ground so prepared the Year before, and there may be a Necessity for dunging it the same Year the Carrots are sown; the Dung should be well rotted, and thinly spread over the Ground, and in Digging it into the Ground, great Care should be taken to disperse it equally, and not to bury it in Heaps, for

that will stop the Roots of the Carrots in their downright Growth, and cause them to be short and forked. Where the Ground is inclinable to bind, there cannot be too much Care taken to break and divide the Parts; therefore in digging the Land for Carrots, there should never be large Spits taken, but they must be very thin, and the Clods well broken; which, if not attended to by the Master, is seldom properly performed by Workmen, who are too apt to hurry over their Work, if they are not well observed.

The Ground when dug should be laid level and even, otherwise when the Seeds are sown and the Earth raked over, Part of them will be buried too deep, and others in Danger of being drawn into Heaps; so the Plants will come up in Bunches, and other Parts of the Ground be naked, which should be carefully avoided.

These Seeds having a great Quantity of small forked Hairs on their Borders, by which they closely adhere, are difficult to sow even, so as not to come up in Patches; you should therefore rub it well through both Hands, to separate the Seed before it is sown; then you should choose a calm Day to sow it, for if the Wind blows, it will be impossible to sow it equal; for the Seeds being very light, will be blown into Heaps. When the Seed is sown, tread the Ground close with your Feet, to bury the Seed, and then rake it level.

When the Plants are come up and have got 4 Leaves, hoe the Ground with a small Hoe about 3 Inches wide, cutting down all young Weeds, and separating the Plants to 4 Inches Distance each Way, that they may get Strength; in about 3 Weeks or a Month after, when the Weeds begin to grow again, hoe the Ground over a second Time, in which you should be careful not to leave 2 Carrots close to each other, as also to separate them to a greater Distance, cutting down all Weeds, and slightly stirring the Surface in every Place, the better to prevent young Weeds from springing, also to facilitate the Growth of the young Carrots.

In about 3 Weeks or a Month after, you must hoe them a third Time, and clear the Weeds as before; now you should cut out the Carrots to the Distance they are to remain, which must be proportioned to the Size you intend to have them grow: If they are to be drawn while young, 5 or 6 Inches asunder will be sufficient; but if they are to grow large, they should be left 8 or 10 Inches distant every Way; you must also keep them clear from Weeds, which, if suffered to grow among the Carrots, will greatly prejudice them.

The 2d Season for sowing these Seeds is in *February*, on warm Banks near the Shelter of a Wall, Pale, or Hedge; but those intended for the open large Quarters, should not be sown before the Beginning of *March*, nor should you sow any later than the End of the same Month; for those which are sown in *April* or *May* will run up to Seed before their Roots have any Bulk, especially if the Weather proves hot and dry.

In *July* you may sow again, for an autumnal Crop; and at the End of *August* you may sow some to stand the Winter; by which Method you will have Carrots in *March*, before the Spring sowing will be fit to draw; but these are seldom so well tasted, and are often very tough and sticky. However, as young Carrots are generally expected early in the Spring, most People sow some

some at this Season; but these should be sown on warm Borders and dry Land, otherwise they are seldom good. If the Winter should prove very severe, it will be proper to cover the young Carrots with Pease Haulm, the Haulm of Asparagus, or some such light Covering, to prevent the Frost from penetrating the Ground, which often destroys the Carrots, where this Care is wanting: But if in very hard Winters the Carrots should be all destroyed which were sown in Autumn, there should be a hot Bed made early in Spring to sow some, which will be fit for Use long before any that are sown in the full Ground: These Beds should be earthed 15 or 16 Inches deep, that the Roots may have a proper Depth of Soil to run down: If these Beds are lined with hot Dung twice, at Times when the Heat of the Beds decline, it will greatly forward the Growth of the Carrots, but there should be great Care taken not to draw the Plants up too weak; these may be allowed to grow closer together, than those sown in the full Ground, because they will be drawn for Use very young. Many People mix several other Sorts of Seeds, as Leek, Onion, Parsnep, Radish, &c. among their Carrots; and others plant Beans, &c. but, in my Opinion, neither of these Methods are good; for, if there is a full Crop of any one of these Plants, there can be no Room for any Thing else amongst them, so that what is got by the one is lost by another; and besides, it is not only more sightly, but better, for the Plants of each Kind to be sown separate; also by this Means your Ground will be clear, when the Crop is gone, to sow or plant any Thing else; but when 3 or 4 Kinds are mixed together, the Ground is seldom at Liberty before the succeeding Spring: Besides, where Beans, or any other tall-growing Plants, are planted among Carrots, they are apt to make them grow more in Top than Root; so that they will not be half so large as if sown singly, without any other Plants amongst them.

The Covetousness of some Gardeners will not permit them to cut out their Carrots to a proper Distance when they hoe them, so that by leaving them close, they draw each other up weak; and if they are drawn while young, they never recover their Strength afterward so perfectly, as to grow near the Size of those, which are properly thinned at their first hoeing: Therefore, where the Carrots are designed to have large Roots, they must never stand too close, nor should they have any other Crop mixed with them.

This Root has been long cultivated in Gardens for the Table, but has not till of late Years been cultivated in the Fields for Cattle, nor has it been practised as yet, but in few Parts in *England*; it is therefore greatly to be wished, that the Culture of it was extended to every Part of *England*, where the Soil is proper for the Purpose; for there is scarce any Root yet known, which more deserves it, being a very hearty good Food for most Sorts of Animals. One Acre of Carrots, if well planted, will fatten a greater Number of Sheep, or Bullocks, than three Acres of Turneps, and the Flesh of these Animals will be firmer and better tasted. Horses are extremely fond of these Roots, and for Hogs there is not any better Food. I have also known these Roots cultivated for feeding Deer in Parks, which has proved of excellent Use in hard Winters, when there has been a

Scarcity of other Food; at which Times great Numbers of Deer have perished for Want; and those which have escaped, have been so much reduced, as not to recover their Flesh the following Summer; whereas those fed with Carrots have been kept in good Condition all the Winter, and on the Growth of the Grass in Spring, have been fat early in the Season, which is an Advantage, where the Grass is generally backward in its Growth.

There is also an Advantage in the Cultivation of this Root beyond that of the Turnep, because the Crop is not so liable to fail; for as the Carrots are sown in the Spring, the Plants generally come up well; and unless the Months of *June* and *July* prove very bad, there is no Danger of the Crop succeeding, whereas Turneps are frequently destroyed by the Flies at their first coming up; and in dry Autumns they are attacked by Caterpillars, which in a short Time devour whole Fields, but Carrots are not attacked by these Vermin: Therefore every Farmer who has a Stock of Cattle or Sheep, should always have a Supply of these Roots, if he has Land proper for the Purpose, which must be light and of a proper Depth to admit of the Roots running down.

In preparing Land for Carrots, if it has not been in Tillage before, it should be ploughed early in Autumn, and then ploughed across again before Winter, laying it up in high Ridges to mellow by the Frost; and if the Ground is poor, there should be some rotten Dung spread over it in Winter, which should be ploughed in about the Beginning of *February*; then in *March*, it should be ploughed again to receive the Seeds; in doing which, some Farmers use two Ploughs, one following the other in the same Furrow, so that the Ground is loosened a Foot and a Half deep: Others have Men with Spades following the Plough in the Furrows, turning up a Spit of Earth from the Bottom, which they lay upon the Top, leveling it smooth and breaking the Clods; the latter Method is attended with a little more Expence, but is much preferable to the first; because in this Way the Clods are more broken, and the Surface is laid much even.

If the Land has been in Tillage before, it will require but three Ploughings; the first just before Winter, when it should be laid in high Ridges for the Reasons before given; the second cross Ploughing should be in *February*, after which, if it is well harrowed to break the Clods, it will be of great Service; the last Time must be in *March* to receive the Seeds; this should be performed in the Manner before mentioned: After this third Ploughing, if there remain great Clods of Earth unbroken, it will be proper to harrow it well before the Seeds are sown. One Pound and a Half of Seeds will be sufficient for an Acre of Land, but as they are apt to adhere together, they are more difficult to sow even, than most other Sorts; therefore some mix a Quantity of dry Sand with their Seeds, rubbing them well together, to separate them from each other, which is a good Method. After the Seeds are sown, they must be gently harrowed in to bury them; and when the Plants come up, they should be hoed in the Manner before directed.

In order to preserve your Carrots for Use all the Winter and Spring, you should, about the Beginning of *November*, when the green Leaves are decayed, dig them up,

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up, and lay them in Sand in a dry Place, where the Frost cannot come, taking them out from Time to Time as you have Occasion, reserving some of the longest and straightest Roots for Seed, if you intend to save any; which Roots should be planted in the Middle of February, in a light Soil about a Foot asunder each Way, observing to keep the Ground clear from Weeds; and about the Middle of August, when you find the Seed is ripe, cut it off, and carry it to a dry Place, where it should be exposed to the Sun and Air for several Days to dry; then you may beat out the Seeds, and put it up in Bags, keeping it in a dry Place until you use it. This Seed is seldom esteemed good after the 1st or 2d Year at most, but new Seed is always preferred, nor will it grow when more than two Years old.

The 3d Sort grows naturally about Montpelier; this hath smoother Stalks than the common Carrot, the Segments of the Leaves are broader, and of a lucid green; the Umbels of the Flowers are larger, and not so regular. This is an annual Plant, but it succeeds best when sown in Autumn.

The 4th Sort is of lower Growth than either of the former; the Stalks are closely covered with short Prickles, the Segments of the Leaves broad and obtuse, the Umbels small, the Involucrum longer than the Umbel, and the Leaves trifid which compose it.

The 5th Sort rises with a slender rough hairy Stalk, upward of 2 Feet high; the Leaves are short, and have a few small ones which are thinly placed, and cut into acute Segments; the Umbels are not so large as those of the common Sort, and the Involucrum is twice the Length of the Umbel; the Leaves which compose it are divided into 5 or 7 Parts, ending in acute Points; the Flowers are yellow.

The 6th Sort hath a channelled Stalk, rising near 3 Feet high, which is terminated by small Umbels of Flowers, with a Wing-pointed Involucrum; the lower Leaves are finely cut into small obtuse Segments, but those upon the Stalks are cut into acute Segments; these Leaves are as smooth as those of Parsley.

The 7th Sort is an annual Plant, which grows naturally in Spain and Italy; this rises with an upright smooth channelled Stalk near 3 Feet high, garnished with smooth Leaves, divided into many fine narrow Segments like those of Fennel; the Stalks branch out upward, and each Branch is terminated by a large Umbel, composed of a great Number of small ones; the Involucrum is shorter than the Umbel, and each of the Leaves which compose it is trifid: The Foot Stalks which sustain the small Umbels (or Rays) are long and stiff; these are by the Spaniards used for picking their Teeth, from whence the Plant had the Title of *Vinaga*, or Pick-tooth. The Seeds should be sown in Autumn, for those sown in Spring frequently fail, or remain in the Ground till next Year before they grow; the Plants require no Culture but to keep them clean from Weeds, and thin them where too close.

These Sorts are preserved in Botanic Gardens only for Variety, being of no Use.

DAUCUS CRETICUS. See Athamanta.

D'AYENA. Monier.

This Genus of Plants receives its Title from the Duke D'Ayen, a great Lover and Promoter of the Science of

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Botany, who has a noble Garden at St. Germain, well stored with rare Plants from different Parts of the World, and has appointed Dr. Monier, the Superintendent of it.

The Characters are,

It hath male and hermaphrodite Flowers on the same Plant, arising on separate Foot Stalks from the Wings of the Stalk at the same Place; the male Flower hath an Emplacement of one Leaf, cut into 5 acute Segments; the Flower hath one Petal, with a slender Tube rising above the Emplacement, and spreads open above, where it is cut into 5 acute Parts; each being terminated by a slender Ligula; the male Flowers have 5 slender Stamina, terminated by obtuse Stigmas; the hermaphrodite Flowers have also the same Number of Stamina, standing round a 5 cornered Germen, supporting a slender Style, to which the Stamina coalesce and form one Body; the Germen becomes a roundish 5 cornered Capsule, having 5 Cells, each having one Kidney-shaped Seed.

We know but one Species of this Genus, viz.

D'AYENA *inermis*, foliis oblongo-cordatis, marginibus dentatis, floribus axillaribus. Smooth D'Ayena with oblong Heart-shaped Leaves indented on their Edges, and Flowers growing from the Sides of the Stalks.

The Seeds of this Plant were sent by the younger De Jussieu from Peru to Paris, where they succeeded, and have since been communicated to other Gardens in Europe: I received the Seeds from Dr. Monier, Intendant of the Duke D'Ayen's Garden at St. Germain, which have for some Years grown in the Chelsea Garden, where the Plants annually flower and perfect Seeds.

This Plant hath a weak ligneous Stalk, which divides into several slender Branches, rising from 9 Inches to a Foot high; these are garnished by oblong Heart-shaped Leaves, slightly indented on their Edges, standing upon pretty long Foot Stalks; they are of a lucid green, end in acute Points, and are placed alternately on the Branches. At the Base of each Foot Stalk, from the Side of the Branches, come out the Flowers, 2, 3, or 4, arising from the same Point, each standing upon a separate slender Foot Stalk; some of these are male, which have generally shorter Foot Stalks than the hermaphrodite Flowers, and have 5 slender Stamina, but no Germen. The hermaphrodite Flowers have their Stamina and Style collected into a Sort of Column, like the malvaceous Flowers, having a 5 cornered Germen at the Bottom, which becomes a roundish 5 cornered Capsule, having 5 Cells, in each of these is lodged one Kidney-shaped Seed. The Flowers are tubulous, spreading open at the Top, where they are cut into 5 acute Segments, each being terminated by a slender Tail; they are purple, and continue in Succession on the same Plants, from July till the Winter.

This Plant is propagated by Seeds, which should be sown upon a moderate hot Bed early in Spring; and when the Plants come up, and have four Leaves, they should be transplanted on a fresh hot Bed to bring them forward; Part of them may be planted in small Pots, and the others may be planted on the Bed: Those in the Pots should be plunged into a hot Bed of Tanners Bark; they must be shaded till they have taken new Root, then free Air admitted to them every Day, in Proportion to the Warmth of the Season; they require to be frequently watered in warm Weather, but should not have

it in too great Plenty. The Plants should continue all the Summer in the hot Bed, where they must have a good Share of Air; for those which are fully exposed to the open Air will not thrive; and if they are too much drawn, they do not flower well. The Plants will live through the Winter in a moderate Stove, but as they perfect Seeds well the first Year, few Persons continue the old Plants. There is a Figure of this Plant exhibited in the 118th Plate of our Figures of Plants.

DAY-LILY. See *Hemerocallis*.

DELPHINIUM. *Lin. Gen. Plant.* 602. *Tourn. Inst. R. H.* 426. Larkspur, or Larkheel.

The Characters are,

The Flower hath no Empalement; it is composed of five unequal Petals placed circularly, the upper Petal is extended at the binder Part into a tubular obtuse Tail; the two Side Petals are nearly of the same Size with the upper, but the two lower are smaller; these spread open. There is a bifid Nectarium situated in the Center of the Petals, and is involved in the Tube by the back Part. The Flower hath many small Stamina which incline to the Petals, and are terminated by small erect Summits; it hath 3 oval Germina, supporting 3 Styles which are as long as the Stamina, crowned by reflexed Stigmas; the Germina, afterward become so many Capsules joined together, which open Crossways, each having one Cell filled with angular Seeds.

The Species are,

1. DELPHINIUM *segetum*. *Tourn. Inst.* 426. Corn Larkspur, and the *Consolida regalis arvensis*. *C. B. P.* 142. Field Royal Consound.

2. DELPHINIUM *bortense*, *flore majore & simplici caeruleo*. *Tourn. Inst. R. H.* 426. Garden Larkspur with a larger single blue Flower, commonly called branching Larkspur.

3. DELPHINIUM *nectariis monophyllis, caule simplici*. *Hort. Cliff.* Larkspur with a one leaved Nectarium and a single Stalk. This is the *Delphinium elatius purpureo-violaceum*. *Sweet*. Upright or unbranched Larkspur.

4. DELPHINIUM *latifolium, parvo flore*. *Tourn. Inst. R. H.* 426. Broad leaved Larkspur with a small Flower.

5. DELPHINIUM *perenne montanum villosum, aconiti folio*. *Tourn. Inst.* 426. Perennial hairy Mountain Larkspur with a Monkhood Leaf, commonly called the Bee Larkspur.

6. DELPHINIUM *humilius angustifolium perenne, flore azureo*. *Amman*. Dwarf narrow leaved perennial Larkspur, with an azure Flower.

7. DELPHINIUM *nectariis diphyllis, labellis integris, floribus spicatis, foliis palmatis multifidis glabris*. *Plate* 119. of the Figures of Plants. Larkspur with a two leaved Nectarium, an entire Lip, Flowers growing in Spikes, and palmated multifid smooth Leaves, commonly called Siberian Larkspur.

8. DELPHINIUM *villosum, nectariis diphyllis, labellis bifidis, foliis palmatis multifidis*. Woolly Larkspur with a two leaved Nectarium, a bifid Lip, and palmated multifid Leaves.

9. DELPHINIUM *caule erecto simplici, foliis quinquelobatis, incis, glabris*. Larkspur with a single upright Stalk, and smooth cut Leaves having 5 Lobes. This is the *Delphinium Lusitanicum glabrum, aconiti folio*. *Tourn.* Smooth Portugal Larkspur, with a Monkhood Leaf.

10. DELPHINIUM *nectariis diphyllis, capsulis triplici-*

bus, foliis multifidis incis acutis, caule simplici. *Gmel.* Larkspur with a two leaved Nectarium, a tripple Seed Vessel, multifid, acute, cut Leaves, and a single Stalk.

11. DELPHINIUM *nectariis diphyllis, foliis palmatis, lobis integris*. *Hort. Cliff.* 213. Larkspur with a two leaved Empalement, and palmated Leaves having entire Lobes. This is the *Delphinium platani folio, stapysagria dictum*. *Tourn. Inst. R. H.* 428. Larkspur with a Plane Tree Leaf called Staveacre.

The several Varieties of the Garden Larkspur are not here enumerated, as they would swell the Work beyond its intended Bulk, if all these were distinguished, so here are only the distinct Species mentioned, and as the Gardeners distinguish the Garden Larkspurs into those which are branched, and such as have upright Stalks, which Difference is permanent, and never alters, whatever may be asserted to the contrary by ignorant Pretenders; so I shall just mention the several Varieties which there are of each Sort, commonly cultivated in the Gardens of the Curious. And first of the branched Larkspur, there are of the following Colours, with single and double Flowers.

Blue, purple, white, Flesh, Ash, and Rose Colours; and some have Flowers beautifully spotted, with two or three of these different Colours.

The upright or unbranched Larkspur, produces a greater Variety of Colours than the branched, and the Flowers are larger and fuller than those; but the principal Colours run nearly the same with those of the other, though many of the Colours are deeper, and there are more different Shades of these Colours in the Flowers of this Sort.

The 1st Sort grows naturally on arable Lands, in France, Spain, and Italy, and is supposed to be the same as the Garden Larkspur, which is a great Mistake, for I have cultivated it many Years in the Garden, and never found it alter: The Leaves of this are broader, and not so much divided as those of the Garden Kind, and placed thinner upon the Stalks; the Flowers are smaller, and grow in longer Spikes; the Stalks are not so much branched as that Sort which is called the branched, nor are they single like the upright, so I think it may be allowed to be a different Species.

The branching Larkspur, which is the 2d Sort, comes later to flower than the upright; this rises with a very branching Stalk 3 Feet high or more, the Branches come out horizontally from the Side of the Stalks, but afterward turn that Part on which the Spike of Flowers grow, which is at the Extremity upward, so as to make an Angle; the Leaves are long and finely divided; the Flowers are placed thinner in the Spikes than those of the upright Sort; they are large, and some of them very double and of various Colours.

The 3d Sort hath upright Stalks, which scarce put out any Branches; the Spikes of Flowers grow erect, and the Flowers are placed very close together, so that they make a fine Appearance. These Plants flower in July and August, and are very great Ornaments to the Borders of the Flower Garden.

These Plants are annual, so are every Year propagated by Seeds; these should be sown where the Plants are designed to remain, for they do not bear transplanting well, especially if they are not removed very young; those Seeds

Seeds which are sown in Autumn, produce the strongest Plants and most double Flowers, and ripen their Seeds better than those sown in Spring, as they come earlier to flower; but to continue a Succession of these Flowers, there should be some Seeds sown in Spring. Where they are sown on the Borders of the Flower Garden for Ornament, they should be in Patches of about a Foot Diameter, in the Middle of the Borders, at proper Distances; in each of these Patches may be scattered ten or a dozen Seeds, covering them over about a Quarter of an Inch with Earth; and in Spring, the Plants may be thinned, leaving about 5 or 6 of the upright Sort in each Patch to stand for flowering; but of the branching Sort, not more than 3 or 4, because these require Room; after this the Plants will require no farther Care but to keep them clean from Weeds, and when they begin to flower should be supported by Flower Sticks to prevent their being broken by Wind. If the Seeds were well chosen, there will be very few ordinary Flowers among them; and if the Seeds of different coloured Flowers are sown in each Patch, they will make a pleasing Variety: But the upright Sort should never be mixed in the same Patches with the branching, because they do not flower at the same Time.

In order to preserve the two Sorts fine without degenerating to single or bad Colours, there should be a Bed of each Sort sown in Autumn, in some separate Part of the Garden, where the Plants should be properly thinned, and kept clean from Weeds, till they begin to shew their Flowers, when they should be carefully looked over every other Day, to pull up all those Plants, whose Flowers are not very double nor of good Colours; for if these are permitted to stand among the others till their Farina has impregnated them, it will certainly cause them to degenerate; so that those Persons who are contented with only marking their good Flowers for Seed, and suffer the others to stand for Seed among them, will always find themselves disappointed in the Goodness of their Flowers the following Season: Therefore those who desire to have these Flowers in Perfection, should never gather the Seeds of such as grew in the Borders of the Flower Garden; because there it will be almost impossible to preserve them so true, as when they are in Beds at a Distance from all other Kinds.

When the Seed Vessels turn brown, they must be carefully watched, to gather them before they open and discharge the Seeds; so that those which are situated on the lower Part of the Stalk, will open long before those on the upper Part of the Stalk are ripe, for which Reason the Pods should from Time to Time be gathered as they ripen, and not suffered to stand till the Stalks are pulled up, which is often practised. Those Pods which are situated on the lower Part of the Stalks, are much preferable to such as grow near the Top; for which Reason those who are very curious in the Choice of their Seeds, crop off the upper Part of the Spikes of Flowers, and never suffer them to stand for Seeds.

As these Plants are very hardy, and require so little Care in their Culture, they are worthy of a Place in every good Garden; for during their Continuance in flower, there are few Plants which make a better Appearance; and for gathering to adorn Rooms, there is scarce any Flower so proper; because by their upright

Growth and long Spikes, they rise to a proper Height, and when the several Colours are skilfully intermixed they make a rich Appearance, and continue long in Beauty.

The 4th Sort grows naturally in *Sicily* and *Spain*, I received the Seeds from *Gibraltar*; this hath a very branching Stalk, which rises about 2 Feet high; the lower Leaves are divided into many broad obtuse Segments, but those on the Stalks are generally single; the Flowers grow scatteringly toward the upper Part of the Branches, they are small and of a deep blue Colour; these are succeeded by very small Seed Vessels, sometimes single, at others double, and very rarely 3 together, as in the common Sorts. This is an annual, whose Seeds should be sown in Autumn, and the Plants treated as the common Sort; having little Beauty, it is only kept in some Gardens for Variety.

The 5th Sort hath a perennial Root, which sends out several upright Stalks in Spring, 4 Feet high; these are garnished with Leaves divided into many broad Segments, in Form of a spreading Hand; these Segments are cut at their Extremities into 2 or 3 acute Points; the Leaves are hairy, and stand on long Foot Stalks; the Flowers terminate the Stalks, growing in long Spikes; they are of a light blue, covered toward their hinder Part with a mealy Down. This flowers in *July* and *August*, and in Autumn the Stalks decay to the Root.

The 6th Sort grows naturally in *Siberia*, from whence the Seeds were sent to the Imperial Garden at *Petersburgh*, where they succeeded; and the Seeds were sent me from thence, by the late Dr. *Amman*; this hath a perennial Root, which puts out 2 or 3 branching Stalks every Spring; these rise about a Foot and a Half high, and are garnished at each Joint with Leaves composed of many narrow Segments, which terminate with several acute Points; they are smooth, and of a light green Colour; the Flowers come out toward the upper Part of the Stalks singly, each standing upon a long naked Foot Stalk; these are large, and of a fine azure Colour; they appear the latter Part of *July*, but are not often succeeded by Seeds in this Country.

The 7th Sort grows naturally in *Siberia*, the Seeds of it were sent me from *Petersburgh*; this is a perennial Plant, which rises with many strong branching Stalks, 6 or 7 Feet high; the upper Part of these Stalks are of a fine purple Colour; these are garnished with Hand-shaped Leaves, which are divided into 4 or 5 broad Lobes, ending with many acute Points; these are smooth, and stand upon long Foot Stalks; the Flowers terminate the Stalks, growing in long Spikes; they are of a fine blue Colour, with a large bearded Nectarium, having two Lips, and of a dark Colour, resembling at a small Distance the Body of a Bee, from whence some have titled this and the 5th Sort, *Bee Larkspur*.

The 8th Sort grows also in *Siberia*; this is perennial, and greatly resembles the 7th, but the Segments of the Leaves are broader and not so long; the Flowers much smaller, and of a paler blue; the Leaves are woolly, and the Stalks do not grow so tall; these Differences are constant in the Plants raised from Seed.

The 9th Sort grows naturally in *Portugal*, from whence I received the Seeds; this rises with an upright unbranched Stalk about 3 Feet high, garnished with

smooth Leaves divided into 5 obtuse Lobes; these are cut on their Edges into obtuse Segments. The Flowers are produced in short Spikes at the Extremity of the Stalk; they are of a fine bright blue, and do not expand so broad as those of the former Sorts, the Petals closely shutting up the bearded Nectarium. This flowers in July and August.

The 10th Sort grows naturally in *Tartary*; the Seeds were sent to the Imperial Garden at *Petersburg*, from whence I received them; this hath a perennial Root, from which come out many compound Leaves, standing circularly round the Foot Stalk; these are divided into 6 or 7 Lobes, which are cut into 5 acute Points: They stand on long hairy Foot Stalks; between these arise the Stalks which are single, and naked at the Bottom; they rise a Foot and a Half high, and are garnished near a Foot in Length with Flowers, which sit close to the Stalks; they are of a pale yellow Colour, and the Nectarium is composed of 2 Leaves. This flowers in July, and the Seeds ripen in Autumn.

All these perennial Larkspurs are propagated by Seeds, which, if sown in Autumn, will more certainly succeed than those sown in Spring; when the Plants come up, they should be kept clean from Weeds, and where too close together, Part of them drawn out, to allow Room for the others to grow till the following Autumn, when they must be planted where they are to remain; the following Summer they will flower, and the Roots continue many Years, growing in Magnitude, so will produce a greater Number of Flower Stalks.

The 11th Sort is annual, and grows naturally in the *Levant*, also in *Calabria*; this rises with a strong hairy Stalk about 2 Feet high, garnished with Hand-shaped hairy Leaves, composed of 5 or 7 oblong Lobes, which have frequently one or two acute Indentures on their Sides; the Flowers form a loose Spike at the upper Part of the Stalk, each standing on a long Foot Stalk; the Flowers are of a pale blue or purple Colour, and have a two leaved Nectarium: This is propagated by Seeds, which should be sown in Autumn, for those sown in Spring never grow the same Year. The Seeds should be sown where the Plants are to remain, and require no other Treatment than the common Larkspur. The common People use the Powder of this Seed to kill Lice, from whence it has been titled *Lousewort*.

DENS CANIS. See *Erythronium*.

DENS LEONIS. See *Leontodon*.

DENTARIA. *Lin. Gen. Plant.* 726. *Tourn. Inst. R. H.* 225. *Tab.* 110. Toothwort, in *French Dentaire*.

The Characters are,

The Empalement of the Flower is composed of 4 oblong oval Leaves, which fall off; the Flower hath 4 obtuse Petals placed in Form of a Cross; it hath 6 Stamina, 4 of which are as long as the Empalement, the other 2 are shorter; these are terminated by oblong Heart-shaped Summits, which stand erect. In the Center is situated an oblong Germen, supporting a short thick Style crowned by an obtuse Stigma; the Germen becomes a long taper Pod with 2 Cells, divided by an intermediate Partition, opening with 2 Valves, including many roundish Seeds.

The Species are,

1. DENTARIA foliis quinatis, foliolis acuminatis serratis. Five leaved Toothwort, whose smaller Leaves

are pointed and sawed on their Edges. This is the *Dentaria pentaphyllos, foliis mollioribus*. *C. B. P.* 322. Five leaved Toothwort with soft Leaves.

2. DENTARIA foliis inferioribus pinnatis, summis simplicibus. *Hort. Cliff.* 335. Toothwort with lower Leaves winged, and the upper ones single. This is the *Dentaria heptaphyllos baccifera*. *C. B. P.* 322. Seven leaved Berry-bearing Toothwort.

3. DENTARIA foliis ternis ternatis. *Lin. Sp. Plant.* 653. Toothwort with three leaved trifoliate Leaves.

4. DENTARIA foliis summis digitatis. *Lin. Sp. Plant.* 654. Toothwort whose upper Leaves are digitated. This is the *Dentaria pentaphyllos foliis asperis*. *C. B. P.* 322. Five leaved Toothwort with rough Leaves.

The first rises with a strong Stalk a Foot and a Half high, garnished with a Leaf at each Joint, composed of 5 Lobes, which are 4 Inches long, and near 2 broad in the widest Part, ending in acute Points, and deeply sawed on their Edges; these are smooth, and stand on long Foot Stalks; the Flowers grow in loose Spikes at the Top of the Stalks; they are small, of a bluish Colour, and succeeded by long taper Pods filled with small roundish Seeds. It grows in the shady Woods in the South of *France* and *Italy*.

The 2d Sort rises with slender Stalks about a Foot high; the Leaves at the Bottom have 7 Lobes, those a little above 5, others but 3, and at the upper Part of the Stalk they are single: The Flowers grow in Clusters at the Top of the Stalk, these have 4 obtuse purple Petals, and are succeeded by taper Pods filled with roundish Seeds.

The 3d Sort rises with an upright Stalk a Foot high; the Leaves are composed of 9 Lobes, 3 growing together, so that one Leaf has three Times three; the Flowers grow in small Bunches on the Top of the Stalks, and are succeeded by small taper Pods filled with roundish Seeds.

The 4th Sort rises a Foot and a Half high; the lower Leaves are composed of 7 Lobes, and those on the upper Part of the Stalk have 5, they are rough and hairy: The Flowers grow in loose Spikes on the Top of the Stalks; they are white, and are succeeded by taper Pods like the other Sorts.

These Plants grow on the Mountains in *Italy*, and in the Woods of *Austria*. The 2d Sort is found wild in *England*, particularly near *Harefield*, in moist shady Woods, and is seldom preserved in Gardens: This produces Bulbs on the Side of the Stalks, where the Leaves are set on, which, if planted, will grow and produce Plants. These Plants are propagated by Seeds, or parting their Roots; the Seeds should be sown in Autumn, soon after they are ripe, in a light sandy Soil, and a shady Situation: In the Spring the Plants may be taken up where they grow too close, and transplanted out in the like Soil and Situation; where, after they have taken Root, they will require no farther Care, but to keep them clear from Weeds: The second Year they will produce Flowers, and sometimes perfect their Seeds.

The best Time to transplant the Roots is in *October*, they should have a moist Soil, and shady Situation; for they will not live when exposed to the Sun.

DEW is by some defined to be a Meteor bred of a thin cold Vapour, or composed of the Steams and Vapour

pours of the Earth; which, being exhaled by the Heat of the Sun, and kept suspended during his Presence, do, upon his Absence, convene into Drops, and then fall down to the Earth again.

Others define it, a thin, light, insensible Mist or Rain, falling while the Sun is below the Horizon.

The Origin and Matter of Dews are, without Doubt, from Vapour and Exhalations of the Earth and Water, raised by the Warmth of the Earth, &c.

There being many Vapours in the Air, though not always visible, hence it comes to pass, that even in clear Weather great Dews fall, especially in Countries where it seldom rains; for when it happens that the scattered Vapours are collected and condensed together, and forced downwards, they must needs fall, and bedew the Plants and Grass.

The thin Vesicles, of which Vapours consist, being once detached from their Bodies, keep rising in the Air till they arrive at such a Stage as is of the same specific Gravity with themselves, when their Rise is stopped: Now, as it is the Warmth or Fire that dilates the Parts of Water, and forms those Vesicles that are specifically lighter than the Air, and are capable of ascending therein; so when that Heat declines, or is lost, as by the Approach or Contiguity of any colder Body, the Vesicles condense, and become heavier and descend.

The Difference between Dew and Rain seems to be only this, That Dew falls at some particular Times as aforesaid, and in very small Drops, so as to be seen when down, but scarce perceivable while it is falling; whereas Rain falls at any Time, and in grosser Drops.

The Rev. Dr. Hales, in his Treatise of *Vegetable Statics*, tells us, That in order to find out the Quantity of Dew that fell in the Night on the 15th of August, 7. p. m. he took two glazed Earthen Pans, which were three Inches deep, and twelve Inches Diameter in Surface: that he filled them with pretty moist Earth, taken from off the Surface of the Ground, and they increased in Weight by the Night's Dew 180 Grains; and decreased in Weight by the Evaporation of the Day 1 Ounce + 282 Grains.

He says likewise, he set these in other broader Pans to prevent any Moisture from the Earth sticking to the Bottom of them. He adds, that the moister the Earth is, the more Dew falls on it in a Night, and more than a double Quantity of Dew falls on a Surface of Water than there does on an equal Surface of moist Earth: The Evaporation of a Surface of Water in nine Hours Winter's dry Day, is $\frac{1}{3}$ of an Inch: The Evaporation of a Surface of Ice set in the Shade during a nine Hours Day, was $\frac{1}{4}$.

So here are 540 Grains more evaporated from the Earth every 24 Hours in Summer than fall in Dew in the Night; that is in 21 Days near 26 Ounces from a circular Area of a Foot Diameter; and Circles being as the Squares of their Diameters, 10 Pounds + 2 Ounces will in 21 Days be evaporated from the Hemisphere of 30 Inches Diameter, which the Sunflower's Root occupies; which, with the 29 Pounds drawn off by the Plant in the same Time, makes 39 Pounds, that is 9 Pounds and $\frac{1}{2}$ out of every cubick Foot of Earth, the Plant's Roots occupying more than $\frac{1}{4}$ cubick Feet: But this is a

much greater Degree of Driness than the Surface of the Earth ever suffers for 15 Inches Depth, even in the driest Seasons in this Country.

DIANTHERA. *Lin. Gen. Plant.* 37. *Flor. Virg.* 6.

The Characters are,

The Flower hath a permanent Empalement of one Leaf, which is tubulous, and cut at the Top into 5 equal Parts; the Flower is of the grinning Kind, having one Petal with a short Tube; the upper Lip is reflexed and bifid, the lower is divided into 3 Parts, the Middle being the broadest; it hath 2 short slender Stamina, adhering to the back of the Petal, one of these hath a twin Summit, the other is a little taller. It hath an oblong Germen supporting a slender Style the Length of the Stamina, crowned by an obtuse Stigma. The Empalement afterward becomes a Capsule with 2 Cells, opening with 2 Valves, which are alternately compressed at the Top and Bottom, and open with an Elasticity, casting a single flat Seed out of each Cell.

We know of but one Species of this Genus, viz.

DIANTHERA. We have no English Title for it.

This Plant grows naturally in Virginia, and other Parts of North America, from whence the Seeds have been sent to England, where they have succeeded. This is a low herbaceous Plant with a perennial Root, which sends out several weak Stalks about 4 Inches long, garnished with roundish Leaves of an aromack Odour, standing close to the Stalks; they are hairy and of a dark green Colour; from the Side of the Stalks the Flowers are produced, in small Clusters, these are in Shape and Colour very like those of the *Clinopodium*, but have only two Stamina in each. It flowers the latter End of July, but rarely produces Seeds in England.

This Plant is very difficult to preserve in this Country, for although it is hardy enough to live in the open Air in England, yet it is very subject to rot in Winter, and if it is placed under Shelter, it is apt to draw up weak, and soon after decay, so is very rare here.

DIANTHUS. *Lin. G. P.* 500. *Caryophyllus*. *Tourn.* Clove Gilly Flower, Carnation Pink, in French Oeiller.

The Characters are,

The Flower hath a long cylindrical Empalement which is permanent; it hath 5 Petals, whose Tails are as long as the Empalement, but their upper Part is broad, plain, and crenated on their Borders, these are inserted in the Bottom of the Tube, and spread open above. It hath 10 Stamina as long as the Empalement, terminated by oblong compressed Summits. In the Center is situated an oval Germen, supporting 2 Styles which are longer than the Stamina, crowned by recurved Stigmas: The Germen afterward becomes a cylindrical Capsule with one Cell, opening in 4 Parts at the Top, and filled with compressed angular Seeds.

The Species are,

1. DIANTHUS floribus solitariis, squamis calycinis lanceolatis binis, corollis crenatis. *Hort. Cliff.* 164. *Dianthus* with a single Flower, having a double scaly Empalement and crenated Petals. This is the *Caryophyllus sylvestris vulgaris angustifolius*. *C. B. P.* 209. Common narrow leaved wild Pink.

2. DIANTHUS caule subunisperm, corollis crenatis, squamis calycinis brevissimis, foliis subulatis. *Lin. Sp. Pl.* 412. *Dianthus*, with one Flower on a Stalk, crenated Petals, very short Scales to the Empalement, and Awl-shaped Leaves.

Leaves. This is the *Caryophyllus minor repens*. Rati Syn. 335. English, small creeping or Maiden Pink, commonly called the matted Pink by Seedsmen.

3. *DIANTHUS floribus subsolitariis, squamis calycinis lanceolatis quaternis, corollis crenatis*. Hort. Cliff. 164. *Dianthus* with one Flower on a Stalk, having four Spear-shaped Scales to the Empalement, and crenated Petals. This is the *Tunica ramiflor flore candido cum corollâ purpureâ*, Hort. Eltb. 400. Branching Pink, with a white Flower, having a purple Circle, called Mountain Pink.

4. *DIANTHUS floribus solitariis, squamis calycinis subovatis brevissimis, corollis multifidis fauce pubescentibus*. Lin. Sp. Plant. 411. *Dianthus* with a single Flower, having short oval Scales to the Empalement, and Petals cut into many Points, with a hairy Bottom. This is the *Caryophyllus simplex flore minore pallido rubente*. C. B. P. Single wild Pink, with a small pale reddish Flower.

5. *DIANTHUS floribus solitariis squamis calycinis subovatis brevissimis, corollis crenatis*. Hort. Cliff. 164. *Dianthus* with a single Flower, having short oval Scales to the Empalement, and crenated Petals. This is the *Caryophyllus bortenensis simplex, flore majore*. C. B. P. 208. Single Garden Carnation with a large Flower.

6. *DIANTHUS floribus aggregatis fasciculatis, squamis calycinis lanceolatis villosis tubum æquantibus*. Hort. Cliff. *Dianthus* with many Flowers gathered into Bunches, having hairy Spear-shaped Scales to the Empalement, as long as the Tube of the Flower. *Caryophyllus barbatus sylvestris*. Bearded wild Pink, called Deptford Pink.

7. *DIANTHUS floribus aggregatis fasciculatis, squamis calycinis linearibus, foliis lanceolatis*. *Dianthus* with many Flowers gathered in Bunches, having very narrow Scales to the Empalement, and Spear-shaped Leaves. This is the *Caryophyllus barbatus bortenensis latifolius*. C. B. P. 208. Broad leaved Garden Sweet William.

8. *DIANTHUS floribus aggregatis capitatis, squamis calycinis ovatis obtusis muticis tubum superantibus*. Lin. Sp. Plant. 410. *Dianthus* with Flowers collected in Heads, and obtuse, oval, chaffy Scales to the Empalements, which are longer than the Tube. This is the *Caryophyllus sylvestris prolifer*. Wild chiding Sweet William.

9. *DIANTHUS floribus aggregatis capitatis squamis calycinis lanceolatis aristatis, corollis crenatis*. *Dianthus* with Flowers collected in Heads, having Spear-shaped Scales to the Empalement which are bearded, and crenated Petals. This is the *Caryophyllus montanus umbellatus, floribus variis luteis ferrugineis italicus*, Barrel. cbf. 648. Italian umbellated Mountain Pink with Flowers varying from yellow to an Iron Colour.

10. *DIANTHUS floribus solitariis, squamis calycinis subulatis fatulis, tubum æquantibus, corollis crenatis*. Hort. Cliff. *Dianthus* with a single Flower on each Stalk, Awl-shaped spreading Scales to the Empalement equalling the Tube, and crenated Petals. *Caryophyllus sinensis supinus, leucoli folio, flore unico*. Tourn. The China Pink.

11. *DIANTHUS caulibus unifloris squamis calycinis ovatis, corollis multifidis, foliis linearibus*. Flor. Succ. 318. *Dianthus* having a single Flower upon a Stalk, oval Scales to the Empalement, the Petals cut into many Points, and narrow Leaves *Caryophyllus sylvestris humilis, flore unico*. Dwarf wild Pink with one Flower.

12. *DIANTHUS caule unifloro, corollis crenatis, squamis calycinis exterioribus tubum æquantibus, foliis linearibus obtusis*. Lin. Sp. Pl. 412. *Dianthus* with one Flower having crenated Petals, the outer Scales of the Empalement equalling the Tube, and narrow obtuse Leaves. *Caryophyllus pumilus latifolius*. Dwarf broad leaved Pink.

The 1st Sort hath a short ligneous Stalk, from which come out several tufted Heads closely garnished with long narrow Leaves, whose Base lie over each other embracing the Stalks; between these arise the Flower Stalks about 9 Inches high, garnished at every Joint by 2 narrow grassy Leaves placed opposite. The Stalks are terminated by a single pale red Flower in June and July, and the Seeds ripen in Autumn. This is rarely admitted into Gardens, having no Beauty.

The 2d Sort is a low trailing Plant, whose Stalks lie on the Ground; these grow very close together and are garnished with short, narrow, grassy Leaves of a deep green; the Stalks are terminated by small red Flowers, each standing upon a separate Foot Stalk. It flowers in July, and the Seeds ripen in September. This Sort grows naturally in several Parts of England, so is not often cultivated in Gardens at present, but formerly the Seeds were sown to make Edgings for the Borders of the Flower Garden by the Title of matted Pink.

The 3d Sort grows naturally upon Chidder Rocks in Somersetshire, and some other Parts of England; this was formerly cultivated in the Gardens, by the Title of Mountain Pink. It hath a Resemblance of the 2d Sort, but the Leaves are shorter and of a grayish Colour; the Stalks grow taller and branch more; the Flowers are larger, of a white Colour with a purple Circle in the Bottom, like that Sort of Pink called Pheasant's Eye. As the Flowers of this Sort have no Scent, the Plants are seldom kept in Gardens.

The 4th Sort grows naturally in several Parts of England, frequently upon old Walls; it is a small single Pink of a pale red Colour, so is not cultivated in Gardens.

The 5th Sort is a small single Carnation, which has been long cast out of all the Gardens; from one of this Sort it is supposed many of the fine Flowers now cultivated in the Gardens have been raised.

The 6th Sort grows naturally in several Parts of England, particularly in a Meadow near Deptford in Kent; from whence it had the Title of Deptford Pink. This is of the Kind called Sweet William; the Flowers grow in close Clusters at the End of the Branches, they are red, and have long bearded Empalements. I have cultivated this Sort 40 Years, and never found it vary.

The 7th Sort is the common Sweet William, which has been long cultivated in Gardens for Ornament, of which there are now great Varieties which differ in the Form and Colour of their Flowers, as also in the Size and Shape of their Leaves; those which have narrow Leaves were formerly titled Sweet Johns by the Gardeners, and those with broad Leaves were called Sweet Williams; there are some of both these Sorts with double Flowers, which are very ornamental Plants.

The 8th Sort grows naturally in France Spain and Italy; this is annual, and rises with an upright Stalk a Foot high, garnished with narrow grassy Leaves, and is terminated

terminated by a small Head of pale red Flowers, included in one common scaly Empalement. These have little Beauty, so the Plants are seldom kept in Gardens.

The 9th Sort is a perennial Plant which rises with an upright Stalk a Foot and Half high, having 2 long narrow Leaves placed opposite at each Joint, which embrace the Stalk with their Base, they are of a deep green Colour, stiff, and end in acute Points. The Flowers grow in close Clusters at the Top of the Stalks, having stiff bearded Empalements; they are yellow and Iron coloured, intermixed on the same Stalk, and frequently there are of both Colours in the same Head. This Plant flowers in *July*, and the Seeds ripen in Autumn; but the Roots will continue several Years, and annually flower and seed; but the young Plants of the second Year always produce the strongest Flowers.

The 10th Sort came originally from *China*, so is titled the *China* Pink; the Flowers have no Scent, but have a great Variety of lively Colours; of late Years, the double Flowers of this Sort have been greatly improved, some of them are as full of Petals as the double Pink, and their Colours very rich. The Plants seldom grow more than 8 or 9 Inches high, branching out on every Side; the Branches grow erect, and are terminated each by a single Flower. They flower in *July*, and continue in Succession till the Frost stops them; they are raised every Year from Seeds, but the Roots will continue two Years in dry Ground.

The 11th Sort is found growing naturally on old Walls and Buildings in many Parts of *England*; this is a single small Pink of a sweet Odour, but of a pale Colour and small, so makes no Appearance, and since the great Improvement which has been made in these Flowers by Culture, this has been entirely neglected.

The 12th Sort grows naturally on the *Alps*; this hath broad, short, blunt Leaves; the Stalks seldom rise more than 4 Inches high, each being terminated by a single Flower of a pale red Colour. It is sometimes preserved in Botanick Gardens for the Sake of Variety, but is rarely admitted into other Gardens.

The Sorts here enumerated, are such as the Botanists allow to be distinct Species, and all the Varieties of fine Flowers, now cultivated in the Gardens of the Curious, are only accidental Variations which have been produced by Culture; the Number of these are greatly increased annually, in different Parts of *Europe*, so that as new Varieties are obtained, the old Flowers are rejected.

The Plants of this Genus may be properly enough divided into 3 Sections. The 1st to include all the Variety of Pinks, the 2d all the Carnations, and the 3d, those of the Sweet William, for although these agree so nearly in their principal Characters, as to be included under the same Genus by the Botanists, yet they never vary from one to the other, though they frequently change and vary in the Colour of their Flowers.

I shall now proceed to treat of these under their different Sections, and first I shall begin with the Pink, of which there are a great Variety now cultivated, the principal of which are; the damask Pink, the white Shock; the Pheasant Eye with double and single Flowers, varying greatly in their Size and Colour, the common red Pink, Cob's Pink, Dobson's Pink, white Cob Pink, and

and Bat's Pink. The old Man's Head, and Painted Lady Pink, rather belong to the Carnation.

The damask Pink is the first of the double Sorts in flower; this hath but a short Stalk, the Flower is not very large, nor so double as many others, the Colour is of a pale Purple inclining to red, but very sweet.

The next which flowers is the white Shock, which was so called from the Whiteness of its Flowers, and the Borders of the Petals being much jagged and fringed; the Scent of this is not so agreeable as of some others.

Then comes all the different Kinds of Pheasants Eye, of which there are frequently new Varieties raised, which are either titled from the Persons who raised them, or the Places where they were raised; some of these have very large double Flowers, but those which burst their Pods, are not so generally esteemed.

The Cob Pink comes after these to flower, the Stalks are much taller than any of the former; the Flowers are very double, and of a bright red Colour; these have the most agreeable Odours of all the Sorts, so merits a Place in every good Garden. The Time of the Pinks flowering is from the latter end of *May* to the Middle of *July*, and frequently that Sort of Pheasant Eye, called Bat's Pink, will flower again in Autumn.

The old Man's Head Pink, and the painted Lady, do not flower till *July*, coming at the same Season with the Carnation, to which they are more nearly allied than the Pink. The first, when in its proper Colours, is purple and white striped and spotted, but this frequently is of one plain Colour which is purple; this Sort will continue flowering till the Frost in Autumn puts a Stop to it, and the Flowers having an agreeable Scent renders them valuable. The painted Lady is chiefly admired for the Liveliness of its Colour, for it is not so sweet, or of so long Continuance as the other.

The common Pinks are propagated either by Seeds, which is the Way to obtain new Varieties, or by Layers, as practised for Carnations, or by Slips, which, if carefully planted will take Root very well.

If they are propagated by Seeds, there should be Care taken in the Choice of them, and only the Seeds of the best Sorts saved, where you are curious to have the finest Flowers. These Seeds may be sown in Spring, and the Plants afterward treated as is hereafter directed for the Carnation, with this difference only, that as the Pinks are less tender, they may be more hardily treated: Those which are propagated by Layers, must be also managed as the Carnation, for which there are full Instructions hereafter. The old Man's Head and painted Lady Pinks, are commonly propagated this Way, but most of the other Sorts are propagated from Slips.

The best Time to plant the Slips of Pinks is about the End of *July*, when, if there should happen Rain, it will be of great Service to them, but if the Weather be dry, they will require to be constantly watered every other Day, untill they have taken Root; these should be planted in a shady Border, and the Ground should be dug well, and all the Clods broken, and if no Rain falls, it should be well soaked with Water a few Hours before the Slips are planted; then the Slips should be taken from the Plants and all their lower Leaves stripped off, and planted as soon as possible after, for if they are
suffered!

suffered to lie long after they are taken from the Plants, they will wither and spoil; these need not be planted at a greater Distance than 3 Inches square, and the Ground must be closed very hard about them; then they must be well watered, and this must be repeated, as often as it is found necessary, till the Cuttings have taken Root, after which they will require no other Care but to keep them clean from Weeds till Autumn, when they should be transplanted to the Borders of the Flower Garden where they are to remain: Some plant the Slips of Pinks later in the Season than is here directed; but those Plants are never so strong nor flower so well, as those which are early planted.

We shall next proceed to the Culture of the Carnation, these the Florists distinguish into 4 Classes.

The 1st they call *Flakes*; these are of 2 Colours only, and their Stripes are large, going quite through the Leaves.

The 2d are called *Bizarres*; these have Flowers striped or variegated with 3 or 4 different Colours, in irregular Spots and Stripes.

The 3d are called *Piquettes*; these Flowers have always a white Ground, and are spotted (or pounced, as they call it) with scarlet, red, purple, or other Colours.

The 4th are called *painted Ladies*; these have their Petals of a red or purple Colour on the upper Side, and are white underneath.

Of each of these Classes there are numerous Varieties, but chiefly of the Piquettes, which some Years ago were chiefly in Esteem with the Florists, but of late the Flakes have been in greater Esteem, than any of the other Kinds. To enumerate the Varieties of the chief Flowers in any one of these Classes, would be needless, since every Country produces new Flowers almost every Year; so that those Flowers, which, at their first Raising were greatly valued, are in 2 or 3 Years become so common, as to be of little Worth, especially if they are defective in any one Property. Therefore (where Flowers are so liable to Mutability, either from the Fancy of the Owner, or that better Kinds are yearly produced from Seeds, which, with good Florists, always take place of older or worse Flowers, which are turned out of the Garden to make Room for them) it would be but superfluous to give a List of their Names, which are generally borrowed either from the Names and Titles of Noblemen, or from the Person's Name, or Place of Abode, who raised them.

These Flowers are propagated either from Seeds (by which new Flowers are obtained), or from Layers, for the Increase of those Sorts which are worthy maintaining; but I shall first lay down the Method of propagating them from Seed, which is thus:

Having obtained good Seeds, either of your own saving, or from a Friend you can confide in; about the Middle of *April*, prepare some Pots or Boxes (according to the Quantity of Seed you have to sow;) these should be filled with fresh light Earth mixed with rotten Neat's Dung, which should be well incorporated together; then sow your Seeds thereon (but not too thick), covering it about a Quarter of an Inch with the same light Earth, placing the Pots, or Cases, so as to receive the Morning Sun only, till Eleven of the Clock, observing to refresh the Earth with Water as often as it may require; in

about a Month's Time your Plants will come up, and if kept clear from Weeds, and duly watered, will be fit to transplant about the latter End of *June*; at which Time you should prepare some Beds (of the same Sort of Earth as was directed to sow them in) in an open airy Situation, in which you should plant them at about 3 Inches square, observing to water and shade them, till they have taken new Root, then you must observe to keep them clear from Weeds; in these Beds they may remain until the Middle of *August*, by which Time they will have grown so large as almost to meet each other; then prepare some more Beds of the like good Earth (in Quantity proportionable to the Flowers you have raised), in which you should plant them at 6 Inches Distance each Way, and not above 4 Rows in each Bed, for the more convenient laying such of them as may prove worthy preserving; for in these Beds they should remain to flower.

The Alleys between these Beds should be 2 Feet wide, that you may pass between the Beds to weed and clean them. If the Season should prove very dry at this Time, they should not be transplanted till there is some Rain, so that it may happen to be the Middle, or latter End of *September* some Years, before there may be Wet enough to moisten the Ground for this Purpose; but if there is Time enough for the Plants to get good Root before the Frost comes on, it will be sufficient. If the Winter should prove severe, the Beds should be arched over with Hoops, that they may be covered with Mats, otherwise many of the Plants may be destroyed, for the good Flowers are not so hardy as the ordinary ones of this Genus. There will be no other Culture wanting to these, but to keep them clean from Weeds, and when they shoot up their Stalks to flower, they must be supported by Sticks to prevent their breaking. When your Flowers begin to blow, you must look over them to see which of them offer to make good Flowers; which as soon as you discover, you should lay down all the Layers upon them; those which are well marked, and blow whole without breaking their Pods, should be reserved to plant in Borders, to furnish you with Seed, and those which burst their Pods, and seem to have good Properties, should be planted in Pots, to try what their Flowers will be, when managed according to Art; and it is not till the 2d Year that you can pronounce what the Value of a Flower will be, which is in Proportion to the Goodness of its Properties; but, that you may be well acquainted with what the Florists call good Properties, I shall here set them down.

1. The Stem of the Flower should be strong, and able to support the Weight of the Flower without loping down.

2. The Petals (or Leaves) of the Flower should be long, broad, and stiff, and pretty easy to expand, or (as the Florists term them) should be free Flowers.

3. The middle Pod of the Flower should not advance too high above the other Part of the Flower.

4. The Colours should be bright, and equally marked all over the Flower.

5. The Flower should be very full of Leaves, so as to render it, when blown, very thick and high in the Middle, and the Outside perfectly round.

Having made Choice of such of your Flowers as promise

mise well for the large Sort, these you should mark separately for Pots, and the round whole blowing Flowers for Borders; pull up all single Flowers, or such as are ill-coloured, and not worth preserving, that your good Flowers may have the more Air and Room to grow strong; these having been laid, as soon as they have taken Root (which will be some Time in *August*), they should be taken off, and planted out, those that blow large in Pots, and the other in Borders.

Of late Years the whole-blowing Flowers have been much more esteemed than those large Flowers which burst their Pods; but especially those round Flowers which have broad Stripes of beautiful Colours, and round Rose Leaves, of which Kinds there have been a great Variety introduced from *France*; but as these *French* Flowers are extremely apt to degenerate to plain Colours, and being much tenderer than those which are brought up in *England*, there are not such great Prices given for the Plants now, as have been a few Years past; from the present Taste for these whole-blowing Flake Flowers, many of the old Varieties, which had been turned out of the Gardens of Florists many Years ago, to make Room for the large Flowers which were then in Fashion, have been received again; and large Prices have been paid of late for such Flowers as some Years ago were sold for one Shilling a Dozen, or less, which is a strong Proof of the Variableness of the Fancies of Florists.

I shall now proceed to give some Directions for propagating these Flowers by Layers, and the necessary Care to be taken in Order to blow them fair and large.

The best Season for laying these Flowers is in *June*, as soon as the Shoots are strong enough for that Purpose, which is performed in the following Manner; after having stripped off the Leaves from the lower Part of the Shoot intended to be laid, make Choice of a strong Joint about the middle Part of the Shoot (not too near the Heart of the Shoot, nor in the hard Part next the old Plant); then with your Penknife make a Slit in the Middle of the Shoot from the Joint upwards half Way to the other Joint, or more, according to their Distance; then with your Knife cut the Tops of the Leaves, and also cut off the swelling Part of the Joint where the Slit is made, so that the Part slit may be shaped like a Tongue; when that outward Skin is pared off, which, if left on, would prevent their pushing out Roots; having loosened the Earth round the Plant, and if Need be, raised it with fresh Mould, that it may be level with the Shoot intended to be laid, left by the Ground being being too low, you split it off by forcing down the Shoot; then with your Finger make a hollow Place in the Earth, just where the Shoot is to come, and with your Thumb and Finger bend the Shoot gently into the Earth, observing to keep the Top as upright as possible, that the Slit may be open; and being provided with forked Sticks for that Purpose, thrust one of them into the Ground, so that the forked Part may take hold of the Layer, and keep it down in its proper Place; then gently cover the Shank of the Layer with the same Sort of Earth, giving it a gentle Watering, to settle the Earth about it, observing to repeat the same as often as is necessary, to promote their rooting. In about 5 or 6 Weeks after this, the Layers will have taken Root sufficient to be transplanted; against which Time

you should be provided with proper Earth for them, which may be composed after the following Manner:

Make Choice of some good up-land Pasture or Common, of a hazel Earth, or light sandy Loam; dig from the Surface of this your Earth about 8 Inches deep, taking all the Turf with it; let this be laid in a Heap to rot and mellow for one Year, turning it once a Month, that it may sweeten; then mix about a 3d Part of rotten Neats Dung, or for Want of that, some rotten Dung from a Cucumber or Melon Bed; let this be well mixed together, and if you can get it Time enough before-hand, let them lie mixed 6 or 8 Months before it is used, turning it several Times, the better to incorporate their Parts.

Observe, that although I have mentioned this Mixture as the best for these Flowers, yet you must not expect to blow your Flowers every Year equally large, in the same Composition; therefore some who are extremely fond of having their Flowers succeed well, alter their Compositions every Year in this Manner, *viz.* one Year they mix the fresh Earth with Neats Dung, which is cold; the next Year with rotten Horse Dung, which is of a warmer Nature, adding thereto some white Sea Sand, to make the Earth lighter.

But, I should rather advise the Planting 2 or 3 Layers of each of your best Kinds in a Bed of fresh Earth not over dunged; which Plants should only be suffered to shew their Flowers, that you may be sure they are right in their Kind; and when you are satisfied in that Particular, cut off the Flower Stems, and do not suffer them to spend the Roots in Blowing; by which Means you will strengthen your Layers. And it is from these Beds I would make Choice of some of the best Plants for the next Year's blowing, always observing to have a Succession of them yearly, by which Means you may blow every Year fine, supposing the Season favourable: For it is not reasonable to suppose, that the Layers taken from such Roots as have been exhausted in producing large Flowers, and have been forced by Art beyond their natural Strength, should be able to produce Flowers equally as large as their Mother Root did the Year before, or as such Layers as are fresh from a poorer Soil, and in greater Health can do. Let us now proceed to planting these Layers, which should be done in *August*, or the Beginning of *September*.

The common Method used by most Florists is, to plant their Layers, at this Season, two in each Pot (the Size of which Pots are about 9 Inches over in the Clear at the Top); in these Pots they are to remain for Bloom; and therefore, in the Spring of the Year, they take off as much of the Earth from the Surface of the Pots as they can, without disturbing their Roots, filling the Pots up again with the same good fresh Earth as the Pots were before filled with. But there is some Difficulty in sheltering a great Quantity of these Flowers in Winter, when they are planted in such large Pots, which in most Winters they will require, more or less; my Method therefore is, to put them singly into Halfpenny Pots in Autumn, and in the Middle of *October* to set these Pots into a Bed of old Tanners Bark, which has lost its Heat, and cover them with a common Frame (such as is used for raising Cucumbers and Melons;) and in 2 of these Frames, which contain 6 Lights, may be set 150 of these

Pots: In these Frames you may give them as much free Air as you please, by taking off the Lights ever Day when the Weather is mild, and putting them on only in bad Weather, and great Rains: and if the Winter should prove severe, cover the Glasses with Mats, Straw, or Pease Haulm, so as to keep out the Frost, which will effectually preserve your Plants in the utmost Vigour.

In the Middle of *February*, if the Season is good, you must transplant these Layers into Pots for their Bloom (the Size of which should be about 7 or 8 Inches over at the Top in the Clear;) in doing which, observe to put some Potsherd or Oyster Shells over the Holes in the Bottoms of the Pots to keep the Earth from stopping them, which would detain the Water in the Pots to the great Prejudice of the Flowers: Then fill these Pots about Halfway with the same good Compost as before directed, and shake the Plant out of the small Pot with all the Earth about the Roots; then with your Hands, take off some of the Earth round the Outside of the Ball, and from the Surface, taking off the Fibres of the Roots on the Outside of the Ball of Earth, then put one good Plant exactly in the Middle of each Pot, so that it may stand well as to the Height, *i. e.* not so low as to bury the Leaves with Earth, nor so high, that the Shank may be above the Rim of the Pot; then fill the Pot up with the same Compost, closing it gently to the Plant with your Hands, giving it a little Water, if the Weather is dry, to settle the Earth; then place the Pots in a Situation where they may be defended from the North Wind; observing to give them gentle Waterings, as the Season may require.

In this Place they may remain till the Middle, or latter End of *April*, when you should prepare a Stage of Boards to set the Pots upon, so contrived as to have little Cisterns of Water round each Pot, to prevent the Insects from getting to your Flowers in their Bloom; which, if they are suffered to do, will mar all your Labour, by destroying all your Flowers in a short Time; the chief and most mischievous Insect is the Earwig, which will gnaw off all the lower Parts of the Petals of the Flowers (which are very sweet,) and thereby cause the whole Flower to fall to Pieces; but since the making one of these Stages is somewhat expensive, and not very easy to be understood by such as have never seen them, I shall describe a very simple one, which I have used for several Years, which answers the Purpose full as well as the best and most expensive one can do: First, prepare some common flat Pans, about a Foot, or 14 Inches over, and 3 Inches deep; place these two and two opposite to each other, at about 2 Feet Distance, and at every 8 Feet in Length-ways, two of these Pans; in each of these turn a Flower Pot upside down, which should be about 6 Inches over at the Top, and lay a flat Piece of Timber, about 2 Feet and a Half long, and 3 Inches thick, cross from Pot to Pot, till you have finished the whole Length of your Stage; then lay your Planks Length-ways upon these Timbers, which will hold two Rows of Planks for the Pots which were ordered for Carnations; when you have set your Pots upon the Stage, fill the flat Pans with Water, always observing, as it decreases in the Pans, to replenish it, which will effectually guard your Flowers against Insects, for they do not care to swim over Water, so that if by this, or any other Con-

trivance, the Passage from the Ground to the Stage, on which the Pots are placed, is defended by a Surface of Water 3 or 4 Inches broad, and as much in Depth, it will effectually prevent these Vermin from getting to the Flowers.

This Stage should be placed in a Situation open to the South East, but defended from the West Winds, to which these Stages must not be exposed, lest the Pots should be blown down by the Violence of that Wind, which is often very troublesome at the Season when these Flowers blow; indeed they should be defended by Trees at some Distance, from the Winds of every Point; but these Trees should not be too near the Stage, nor by any Means place them near Walls, or tall Buildings; for in such Situations the Stems of the Flowers will draw up too weak. About this Time, *viz.* the Middle of *April*, your Layers will begin to shoot up for flower; you must therefore be provided with some square Deal Sticks, about 4 Feet and a Half long, which should be thicker toward the Bottom, and planed off taper at the Top; these Sticks should be carefully stuck into the Pots as near as possible to the Plant without injuring it; then with a slender Piece of Bass Mat fasten the Spindle to the Stick to prevent its being broken; this you must often repeat, as the Spindle advances in Height, and also observe to pull off all Side Spindles as they are produced, and never let more than 2 Spindles remain upon one Root, nor above one, if you intend to blow exceeding large. Toward the Beginning of *June* your Flowers will have attained their greatest Height, their Pods will begin to swell, and some of the earliest begin to open on one Side; you must therefore observe to let it open in 2 other Places at equal Angles; this must be done so soon as you perceive the Pod break, otherwise your Flower will run out on one Side, and be in a short Time past recovering, so as to make a complete Flower; in a few Days after the Flowers begin to open, you must cover them with Glasses which are made for that Purpose, in the following Manner:

On the Top of the Glass, exactly in the Center, is a Tin Collar, or Socket, about Three-fourths of an Inch square, for the Flower Stick to come through; to this Socket are soldered 8 Slips of Lead at equal Distances, which are about 6 Inches and a Half long, and spread open at the Bottom about 4 Inches asunder; in these Slips of Lead are fastened Slips of Glass, cut to the Distances of the Lead, which, when fixed in, are bordered round the Bottom with another Slip of Lead quite round, so that the Glass hath 8 Angles, with the Socket in the Middle, and spread open at the Bottom about 11 Inches wide.

When your Flowers are open enough to cover with these Glasses, you must make a Hole through your Flower Stick, exactly to the Height of the under Part of the Pod, through which you should put a Piece of small Wire about 6 Inches long, making a Ring at one End of the Wire to contain the Pod, in which Ring you should fix the Stem of the Flower; then cut off all the Tyings of Bass, and thrust the Stem of the Flower so far from the Stick, as may give convenient Room for the Flower to expand without pressing against the Stick; to which Distance you may fix it, by turning your Wire so as not to draw back through the Hole; then make another

another Hole through the Stick, at a convenient Distance above the Flower, through which you should put a Piece of Wire, an Inch and a Half long, which is to support the Glasses from sliding down upon the Flowers, and be sure to observe, that the Glasses are not placed so high as to admit the Sun and Rain under them to the Flowers, nor so low as to scorch their Leaves with the Heat. At this Time also, or a few Days after, as you judge necessary, you should cut some stiff Paper, or Cards, into Collars about 4 Inches over, and exactly round, cutting a Hole in the Middle of it about Three-fourths of an Inch Diameter, for the Bottom of the Flower to be let through; then place these Collars about them to support the Petals of the Flower from hanging down; this Collar should be placed within the Calyx of the Flower, and should be supported thereby; then observe from Day to Day what Progress your Flowers make; and if one Side comes out faster than the other, turn the Pot about, and shift the other Side towards the Sun; also if the Weather proves very hot, you should shade the Glasses in the Heat of the Day with Cabbage Leaves, &c. to prevent their being scorched, or forced out too soon; and, when the middle Pod begins to rise, you should take out the Calyx thereof with a Pair of Nippers made for that Purpose; but this should not be done too soon, lest the middle Part of the Flower should advance too high above the Sides, which will greatly diminish the Beauty of it: And you should also observe whether there are more Leaves in the Flower, than can properly be expanded for Want of Room; in which Case you should pull out some of the lowermost or most unlikely Leaves to spread, drawing out and expanding the others at the same Time: When your Flowers are fully blown, if you cut them off, you should put on a fresh Collar of stiff Paper, which should be cut exactly to the Size of the Flower, that it may support the Petals to their full Width, but not to be seen wider than the Flower in any Part: When this is put on, you must draw out the widest Leaves to form the Outside of the Flower, which although they should be in the Middle (as it often happens,) yet by removing the other Leaves they may be drawn down, and so the next longest Leaves upon them again, that the whole Flower may appear equally globular without any hollow Parts. In doing this, some Florists are so curious as to render an indifferent Flower very handsome; and on this depends, in a great Measure, the Skill of the Artift to produce his large and fine Flowers, to the greatest Advantage.

During the flowering Season, particular Care should be taken not to let them suffer for Want of Water, which should by no Means be raw Spring Water; nor do I approve of compound Waters, such as are enriched with various Sorts of Dung; but the best and most natural Water is that of a fine soft River; next to that is Pond Water, or standing Water; but if you have no other than Spring Water, it should be exposed to the Sun and Air two Days before it is used, otherwise it will give the Flowers the Canker, and spoil them.

The Directions here given are chiefly for the Management of those large Carnations which burst their Pods, and require the greatest Skill of the Florists, to blow them in Perfection; but as of late these have not been so much in Esteem as formerly, and those Flowers which

do not break their Pods, and are termed *whole Blowers* have now the Preference: These are generally planted in Pots, and treated in the same Way as the large Flowers, but do not require so much Trouble to blow them: All that is necessary to be done for these, is to fasten their Stems up to Flower Sticks to prevent their being broken, and to take off the Pods which proceed from the Side of the Stalks, leaving only the Top Bud to flower, if they are intended to be large and fair; and when the Flowers begin to open, if they are screened from the Sun in the Heat of the Day, and also from Wet, they will continue much longer in Beauty.

But although the most valuable of these Flowers are usually planted in Pots, and thus carefully treated, yet many of these *whole blowing* Flowers may be planted in Beds, or the Borders of the Flower Garden, where they are some of the principal Ornaments during their Continuance in flower, which is from the Beginning of July till the Middle of August, especially if the several Colours are properly intermixed; for the Flakes and Bizzars, should be intermixed with the Picquettes, and not planted separate, unless where they are designed for saving the Seeds; in which Case, those which are the finest of each Sort, should be planted in Beds at a Distance from each other, especially where Persons are desirous to keep them distinct; for where the Sorts are blended together, there will be an Admixture of their Farina, so that the Seeds will vary, and not produce the particular Kinds; though I do not remember ever to have seen any Flake Flowers arise from Seeds of the Picquettes, nor *vice versa*.

The Flowers which are planted in the full Ground, generally produce Seeds better than those in Pots; but whoever proposes to raise a Supply of new Flowers from Seeds, must always observe to save the best of their Seedling Flowers for this Purpose; for it is well known, that after any of these Flowers have been a few Years propagated by Layers, they become barren, and do not seed; which is also the Case with most other Plants which are propagated by Slips, Layers, or Cuttings; so that the young Plants which have been newly obtained from Seeds, are always the most productive of Seeds: The Plants which are propagated by Layers or Slips, will always continue to produce the same Flowers, so that when a fine Variety is obtained, it is this Way propagated and maintained; but all the new Varieties come from Seeds, so that all those who are curious in these Flowers, annually sow their Seeds.

I shall next proceed to the Culture of that Species, which is known by the Title of *Sweet William*; of this there are a great Variety of different Colours, which are single, and 3 with double Flowers: Some of these have narrow Leaves, which were formerly titled *Sweet Johns*, but of late that Distinction has not been made, because they are found to vary when raised from Seeds.

Some of the single Flowers have very rich Colours, which frequently vary in the same Bunch; there are others with fine variegated Flowers, and others whose Middles are of a soft red, bordered with white, called Painted Ladies; but where Persons are desirous to preserve any of these Varieties in Perfection, the best Flowers of each should be particularly marked, and no other

permitted to stand near them, lest their Farina should impregnate them, which would cause them to vary.

That called the Painted Lady Sweet William, is a very beautiful Variety; the Stalks do not rise so high as most of the other; the Bunches of Flowers are larger, produced more in the Form of an Umbel, and the Flowers standing equal in Height, make a better Appearance: There are others whose Stalks rise 3 Feet, and the Flowers of a very deep red or scarlet Colour. They all flower at the same Time with the Carnations, which renders them less valuable, because they have no Scent.

The single Kinds of these are generally propagated by Seeds, which must be sown the latter End of *March*, or the Beginning of *April*, in a Bed of light Earth, and in *June* they will be fit to transplant out; at which Time you must prepare some Beds, and set them at 6 Inches Distance every Way: In these Beds they may remain till *Michaelmas*, at which Time they may be transplanted into the Borders of the Pleasure Garden or Wilderness. These will flower the next Year in *June*, and perfect their Seeds in *August*, which you should save from the best coloured Flowers for a Supply.

They may be also propagated by slipping their Roots at *Michaelmas*; but this is seldom practised, since their seedling Roots will always blow the strongest, and new Varieties are obtained yearly.

The 3 Sorts with double Flowers, are, 1. The broad leaved Sort, which hath very double Flowers, of a deep purple Colour inclining to blue, which bursts its Pods, so not so much esteemed as the others, and therefore is now almost totally banished the Gardens of the Curious. 2. The Double Rose Sweet William, whose Flowers are of a fine deep Rose Colour, and smell sweet; this is much valued for the Beauty and Sweetness of its Flowers; the Empalement (or Pods) of these Flowers never burst, but the Flowers remain with their Petals fully expanded, and do not hang down loosely as those of the former. 3. The Mule, or Fairchild's Sweet William; it hath narrower Leaves than either of the former, and is of that Variety called Sweet John: This was said to have been produced from Seeds of a Carnation, which had been impregnated by the Farina of the Sweet William; the Flowers are of a brighter red Colour than either of the former, their Bunches not quite so large, but the Flowers have an agreeable Odour.

The double Kinds are propagated by Layers, as the Carnations; they love a middling Soil, not too light, nor too heavy or stiff, nor too much dunged, which very often occasions their rotting: These continue flowering a long Time, and are extremely beautiful, especially the Mule, which produces two full Blooms of Flowers, one in *June*, and the other in *July*. This is very subject to canker and rot away, especially if planted in a Soil over wet or too dry, or if watered with sharp Spring Water. These Flowers being planted in Pots, are very proper to adorn Court Yards at the Time they are in flower.

The China Pink is generally esteemed an annual Plant; because the Plants which are raised from Seeds flower and produce ripe Seeds the same Season, so their Roots are not often preserved; but when planted on a dry Soil, they will continue 2 Years, and the second Year will produce a greater Number of Flowers than the first: There are a great Variety of very rich Colours in these

Flowers, which annually vary when raised from Seeds. The double Flowers are most esteemed, though the Colours of the single are more distinct and beautiful; for the Multiplicity of Petals in the double Flowers, in a great Measure hides the deep Shades, which are toward the lower Part of the Petals.

These Plants are propagated by Seeds, which should be sown on a gentle hot Bed about the Beginning of *April*; this moderate Heat is only intended to forward the Vegetation of the Seeds, therefore when the Plants come up, they must have a large Share of Air admitted to them, to prevent their drawing up weak; and as soon as the Weather will permit, they must be exposed to the open Air; in about 3 Weeks or a Month, the Plants will be fit to remove; then they should be carefully taken up with good Roots, and planted in a Bed of rich Earth, at about 3 Inches asunder, being careful to shade them from the Sun till they have taken new Root, and in dry Weather they must have Water 3 or 4 Times a Week. The farther Care is to keep them clean from Weeds till the End of *May*, at which Time they may be transplanted to the Places where they are designed to remain for flowering, when they may be taken up with large Balls of Earth to their Roots, so as scarcely to feel their Removal, especially if it happens to rain at that Time.

As these Plants do not grow large, so when they are planted singly in the Borders of the Flower Garden, they do not make so fine an Appearance, as when planted by themselves in Beds; or if planted in small Clumps, of 6 or 8 Roots in each, where the Flowers being of different Colours, set off each other to Advantage.

Those who are curious in these Flowers, take particular Care in saving their Seeds, for they never permit any single Flowers to stand among their double, but pull them up as soon as they shew their Flowers, and also draw out all those which are not of lively good Colours; where this is observed, the Flowers may be kept in great Perfection; but where Persons have trusty Friends, who live at some Distance, with whom they can exchange Seeds, once in 2 or 3 Years; it is much better so to do, than to continue sowing Seeds in the same Place many Years in Succession, and this holds true in most Sorts of Seeds: But the great Difficulty is to meet with an honest Person of equal Skill, who will be as careful in the Choice of his Plants for Seed, as if he was to sow them himself.

DIAPENSIA. See Sanicula.

DICTAMNUS. *Lin. Gen. Plant.* 468. *Fraxinella*. *Tourn. Inst. R. H.* 430. *Tab.* 243. White Dittany, or *Fraxinella*, in French *Fraxinelle*. This Plant was so titled from *Fraxinus* the Ash Tree, the Leaves of this having some Resemblance in their Form, to those of the Ash Tree, so it was called *Fraxinella*, or Little Ash.

The Characters are,

The Empalement is composed of 5 small oblong Leaves, ending in Points. The Flower hath 5 oblong Petals which are unequal, two of them turning upward, two are oblique on the Sides, and one turns downward. It hath 10 rising Stamina, as long as the Petals, which are situated between the two Side Petals; they are not equal in Length, and are terminated by obtuse 4 cornered Summits standing erect. In the Center is situated a 5 cornered Germen supporting a short

a short incurved Style, crowned by an acute Stigma; the Germen afterward becomes a Capsule with 5 Cells, each having a compressed Margin, which spread open at their exterior Parts, but join together at their inner, opening with 2 Valves, and inclosing several roundish hard shining Seeds.

We have but one distinct Species of this Genus, viz.

DICTAMNUS. Hort. Cliff. 161. *Fraxinella*. Clus. Hist. 99. and *Dictamnus albus vulgò fraxinella*. C. B. P. 222. White Dittany, commonly called *Fraxinella*.

There are three Varieties of this Plant, one with a pale red Flower striped with purple, another with a white Flower, and one with shorter Spikes of Flowers; but as I have observed them to vary when propagated by Seeds, so I esteem them only seminal Varieties.

This is a very ornamental Plant for Gardens, and as it requires very little Culture, so deserves a Place in all good Gardens. It hath a perennial Root, which strikes deep into the Ground, and the Head annually increases in Size; these send up many Stalks, which rise from 2 to 3 Feet high, garnished with winged Leaves placed alternate; these are composed of 3 or 4 Pair of oblong Lobes, terminated by an odd one: They are smooth and stiff, sitting close to the Mid-rib, which hath a longitudinal Furrow on the upper Side; the Lobes (or small Leaves) placed on each Side the Mid-rib, are oblique, but those which terminate the Leaf have their Sides equal. The Flowers are produced in a long pyramidal loose Spike, or Thyse; on the Top of the Stalk, which is 9 or 10 Inches long; the Flowers of one Sort are white, and of the other they are of a pale red marked with red or purple Stripes. The whole Plant when gently rubbed, emits an Odour like that of Lemon Peel, but when bruised has something of a balsamick Scent. It flowers the latter End of May, and in June, and the Seeds ripen in September.

These Plants are propagated by Seeds, which, if sown in Autumn soon after they are ripe, the Plants will appear the following April; but when they are kept out of the Ground till Spring, they seldom succeed; or if they do grow, it is the following Spring before the Plants appear, so that a whole Year is lost. When the Plants come up, they must be constantly kept clean from Weeds; and in the Autumn when their Leaves decay, the Roots should be carefully taken up, and planted in Beds at 6 Inches Distance every Way; these Beds may be 4 Feet broad, and the Paths between them 2, that there may be Room enough to pass between to weed them. In these Beds the Plants may stand 2 Years, during which Time they must be constantly kept clean from Weeds; and if they thrive, will be strong enough to flower, so in Autumn they should be carefully taken up, and planted in the Middle of the Borders of the Flower Garden, where they will continue 30 or 40 Years, producing more Stems of Flowers in Proportion to the Size of the Roots. All the Culture these require, is to be kept clean from Weeds, and the Ground about them dug every Winter.

The Roots of this Plant are used in Medicine, and esteemed cordial and cephalick, resisting Putrefaction and Poison, and are useful in malignant and pestilential Distempers, as also in Epilepsies.

DICTAMNUS CRETICUS. See *Origanum*.

DIERVILLA. Tourn. *Lonicera*. Lin. Gen. Pl. 210.

The Title was given it by Dr. Tournefort, after Mr. Dierville, a Surgeon, who brought it from Acadia.

The Characters are,

The Empalement of the Flower is cut into 5 Parts, almost to the Bottom; the Flower is of one Leaf, having a Tube at the Bottom, but is cut into 5 Parts at the Top, and has the Appearance of a Lip Flower; it hath 5 Stamina, terminated by oblong Summits, which are equal with the Petal. At the Bottom of the Flower is situated an oval Germen fixed to the Empalement, supporting a slender Style equal with the Stamina, crowned by an obtuse Stigma; the Germen afterward becomes a pyramidal Berry, divided into 4 Cells, which contain small round Seeds.

We know but one Species of this Genus, viz.

DIERVILLA *Acadiensis fruticosa, flore luteo*. Aët. R. Par. 1706. Shrubby *Diervilla* of Acadia with a yellow Flower. This is the *Lonicera racemis terminalibus foliis serratis*. Lin. Sp. Plant. 275. *Lonicera* with Bunches of Flowers terminating the Branches and sawed Leaves.

This Plant grows naturally in the northern Parts of America, from whence it was brought to Europe, and is now propagated in the Gardens for Sale. It hath woody Roots which spread far in the Ground, and put out Shoots at a Distance from the principal Stalk, whereby it multiplies greatly: The Stalks are ligneous, and seldom rise more than a Foot and a Half high; these are garnished with oblong Heart-shaped Leaves, ending in acute Points; they are very slightly sawed on their Edges, and are placed opposite, sitting close to the Stalks: The upper Part of the Stalks is garnished with Flowers, which usually come out from the Side of the Stalk at the sitting on of the Leaves, and also at the Top of the Stalks; there are 2 or 3 Flowers sustained upon each Foot Stalk: They are of a pale yellow, and being small, make no great Appearance. These come out in May, and if the Season proves moist and cold, they frequently flower again in August.

It is easily propagated by Suckers, which it sends out in Plenty, and loves a moist Soil and shady Situation, where the Cold will never injure it.

DIGITALIS. Lin. Gen. Pl. 676. Tourn. Inst. R. H. Raii Meth. Pl. 89. Foxglove, in French *Digitale*.

The Characters are,

It hath a permanent Empalement cut into 5 Parts; the Flower is Bell-shaped, of one Petal, with a large open Tube, whose Base is cylindrical and contracted, but the Brim is divided into 4 Parts slightly; the upper Lip spreading and indented at the Top, the lower is larger. It hath 4 Stamina, inserted in the Base of the Petal, two being longer than the other, which are terminated by bipartite acuminate Summits; the Flower being past, the Germen swells to an oval Capsule, having 2 Cells sitting on the Empalement, inclosing many small angular Seeds.

The Species are,

1. *DIGITALIS calycinis foliolis ovatis acutis, corollis obtusis, labio superiore integro*. Hort. Upsal. 178. Foxglove whose small Leaves of the Empalement are oval and acute, the Petals obtuse, and the upper Lip entire. *Digitalis purpurea folio aspero*. C. B. P. 243. Purple Foxglove with a rough Leaf, or common Foxglove.

2. *DIGITALIS calycinis foliolis acutis, corollis acutis, labio superiore bifido*. Foxglove with acute Leaves to the Empalement,

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Impalement, the Petal sharp-pointed, and the upper Lip bifid. This is the *Digitalis Hispanica purpurea minor*. Tourn. Infl. 165. Lesser Spanish purple Foxglove.

3. *DIGITALIS calycinis foliolis acutis, corollis obtusis, labio superiore integro, foliis lanceolatis obtusis*. Foxglove with acute Leaves to the Empalement, an obtuse Petal, whose upper Lip is entire, and obtuse Spear-shaped Leaves. This is the *Digitalis minor lutea, parvo flore*. C. B. P. Lesser yellow Foxglove with a small Flower.

4. *DIGITALIS foliolis calycinis acutis, corollis obtusis, labio superiore trifido, foliis oblongo-cordatis acutis*. Foxglove with acute Leaves to the Empalement, an obtuse Petal, whose upper Lip is trifid, and oblong Heart-shaped pointed Leaves. This is the *Digitalis major lutea vel pallida parvo flore*. C. B. P. 244. Greater Foxglove with a small yellow or pale Flower.

5. *DIGITALIS foliolis calycinis linearibus, corollis acutis, labio superiore integro, foliis lanceolatis*. Foxglove with long narrow Leaves to the Empalement, an acute Petal, whose upper Lip is entire, and Spear-shaped Leaves. This is the *Digitalis lutea, magno flore*. C. B. P. 244. Yellow Foxglove with a larger Flower.

6. *DIGITALIS calycinis foliolis ovatis obtusis, corollae labio inferiore longitudine floris*. Lin. Sp. Plant. 622. Foxglove with oval blunt Leaves to the Empalement, and the lower Lip of the Petal as long as the Flower. This is the *Digitalis angustifolia, flore ferrugineo*. C. B. P. 244. Narrow-leaved Foxglove with an Iron-coloured Flower.

7. *DIGITALIS calycinis foliolis ovatis obtusis, corollae labio inferiore reflexo, foliis inferioribus lanceolatis superioribus linearibus*. Foxglove with oval blunt Leaves to the Empalement, the under Lip of the Petal reflexed, the lower Leaves Spear-shaped, and the upper linear. This is the *Digitalis latifolia flore ferrugineo*. H. R. Par. Broad-leaved Foxglove with an Iron-coloured Flower.

8. *DIGITALIS calycinis foliolis lanceolatis, corollis bilabiatis acutis, caule fruticoso*. Lin. Sp. Plant. 622. Foxglove with Spear-shaped Leaves to the Empalement, an acute Petal with two Lips, and a shrubby Stalk. This is the *Digitalis acanthoides Canariensis frutescens, flore aureo*. Hort. Amst. 2. p. 105. Shrubby Canary Foxglove like Bearsbrech, with a golden Flower.

9. *DIGITALIS calycinis foliolis acutis, foliis ovato-lanceolatis nervosis*. Foxglove with acute Leaves to the Empalement, and oval Spear-shaped veined Leaves. This is the *Digitalis lutea non ramosa, scorzonera folio*. Buxb. Cent. 25. Yellow unbranched Foxglove with a Leaf like Scorzonera.

The 1st Sort grows naturally by the Side of Hedges in shady Woods in most Parts of England, so is rarely cultivated in Gardens. This is a biennial Plant, which the first Year produces a great Tuft of long rough Leaves which are hairy; the second Year it shoots up a strong herbaceous Stalk, which rises from 3 to 4 Feet high, garnished with Leaves of the same Form as the lower, but they gradually lessen upward, so those which are intermixed with the Flowers on the Top, are very narrow. The Flowers grow in a long loose Thyrs, standing only on one Side of the Stalk; they are large, tubulous, and shaped like a Thimble, of a purple Colour, with several white Spots on the under Lip; these Flowers are succeeded by oval Capsules with 2 Cells, filled with dark brown Seeds. It flowers in June, and the Seeds ripen in

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Autumn; if they are permitted to scatter, the Plants will come up in Spring, and become troublesome Weeds; but whoever has a Mind to cultivate it, should sow the Seeds in Autumn, for those sown in Spring seldom succeed. This Plant stands in the List of medicinal Simples of the Dispensatories, and there is an Ointment made of the Flowers and May-butter, which has been in good Esteem.

There is a Variety of this with a white Flower, which is found growing naturally in some Parts of England, which differs only in the Colour of the Flower; this Difference is permanent, for I have cultivated it near 30 Years in the Garden, and have never found it vary.

The 2d Sort grows naturally in Spain, from whence I received the Seeds; this Plant seldom rises much more than a Foot high, the lower Leaves are 10 Inches long, and 3 broad in the Middle; they are soft, woolly, and roughly veined on their under Side; the Stalks are garnished with Leaves of the same Shape, but smaller; the upper Part of the Stalk hath a short Thyrs of purple Flowers like those of the common Sort but smaller, and the Segments of the Petal are acute. This Plant retains its Difference when cultivated in Gardens.

The 3d Sort hath very long obtuse Leaves near the Root; the Stalk is small, and rises from 2 to 3 Feet high, the lower Part being pretty closely garnished with smooth Leaves, about 3 Inches long and one broad, ending in obtuse Points: The upper Part of the Stalk, for 10 Inches in Length, is adorned with small yellow Flowers, closely ranged on one Side of the Stalk, having a few very small acute Leaves placed between them, situated on the opposite Side of the Stalk; the upper Lip of the Flower is entire, and the Petal obtuse. It flowers in June, the Seeds ripen in Autumn.

The 4th Sort differs from the 3d, in having shorter Leaves, which end in acute Points, and no Indentures on their Edges; the Flowers are larger, and the upper Lip is divided into 3 Parts.

The 5th Sort hath long smooth veined Leaves at the Bottom; the Stalk is strong, and rises 2 Feet and a Half high, garnished with Leaves 5 Inches long, one and a Half broad, ending in acute Points; these have many longitudinal Veins, and are slightly sawed on their Edges; the upper Part of the Stalk is adorned with large yellow Flowers, nearly of the Size of those of the common Sort, the Brim having acute Points, and the upper Lip entire. This flowers and ripens its Seeds about the same Time as the former.

The 6th Sort hath narrow smooth Leaves, which are entire; the Stalk rises near 3 Feet high, and puts out some slender Branches from the Side; the lower Part of the Stalks is garnished with narrow small Leaves, 3 Inches long, and a third of an Inch broad; the Spike of Flowers terminate the Stalk, growing in a loose Spike, with very few Leaves between the Flowers, and those very small; the Empalement is divided into 4 obtuse Parts, the lower Lip extending much longer than the upper. The Flowers are of an Iron Colour, and appear in June.

The 7th Sort rises with an upright Stalk, from 4 to almost 6 Feet high; the lower Part is garnished with Spear-shaped Leaves, which are 4 Inches long, and 1 broad in the Middle, lessening gradually to both Ends; these

these have several longitudinal Veins, and their upper Surface is spotted with black; the upper Part of the Stalk, for near 18 Inches, is closely adorned with Iron-coloured Flowers, shorter than those of the former Sort, and the Rim of the under Lip is reflexed; between these Flowers are many long narrow Leaves, which stand out much beyond the Flowers, especially on the lower Part of the Spike. It flowers the End of June and in July, and the Seeds ripen in Autumn.

The 8th Sort grows naturally in the Canary Islands, from whence the Seeds were first brought to England; and many of the Plants raised in the Bishop of London's Garden at Fulham, Part of which were sent to the Royal Gardens at Hampton Court, and some were sent over to the Gardens in Holland: Those sent to Hampton Court, were preserved a few Years, but by the Ignorance of the Gardeners, to whose Care they were committed, these, with many other valuable Plants, were destroyed.

This Plant hath a shrubby Stalk which rises 4 Feet High, dividing into several Branches, garnished with rough Spear-shaped Leaves near 5 Inches long, and one and a Half broad in the Middle, gradually decreasing to both Ends, having a few short Serratures on their Edges; these are placed alternately on the Branches; each of these Branches is terminated by a loose Spike of Flowers, about 4 Inches in Length, the Empalement is cut into 5 acute Segments almost to the Bottom; the upper Lip is long and entire, this is arched, and immediately under it the Stamina and Style are situated; the lower Lip is obtuse, and indented at the Top; there are two acute Segments on the Side, which compose the Chaps of the Flower; there are 2 of the Stamina longer than the other; these are crowned with roundish Summits. In the Bottom of the Flower is the Germen, supporting a slender Style, crowned by an oval Stigma; the Germen becomes an oval Capsule, filled with small angular Seeds.

This Sort begins to flower in May, and there is generally a Succession of Flowers on the same Plant, till Winter puts a Stop to them, which renders the Plant more valuable. It is propagated by Seeds, which should be sown in Pots filled with light Earth, in Autumn, soon after the Seeds are ripe; these Pots should be plunged into an old Bed of Tanners Bark, whose Heat is gone, and in mild Weather the Glasses should be drawn off to admit the Air; but in hard Rains and Frost they must be kept on, to protect the Seeds from both, which frequently destroys them when they are exposed; in Spring the Plants will come up, when they should enjoy the free Air in mild Weather, but must be protected from Cold. When these are large enough to transplant, they should be each planted into a small Pot filled with light Earth, and placed under the Frame till they have taken new Root, then they should be gradually inured to the open Air. During the Summer Season the Plants should remain abroad in a sheltered Situation, but in the Winter they must be placed in a Green-house, for they will not live abroad: They must not be kept too warm and close in the House, for they only want Protection from Frost; therefore in mild Weather, they should have free Air constantly admitted to them, and require frequent Waterings, but they should not have it in too great Plenty in Winter.

The 9th Sort grows naturally in Tartary, and the

Seeds were sent to the Imperial Garden at Petersburg from whence I received them. This Plant hath many oval Spear-shaped Leaves, which are smooth, arising from the Root; between these arise the Stalk, which grows about a Foot high, garnished below with smooth Spear-shaped Leaves, from 4 to 5 Inches long, and one and a Half broad in the Middle, lessening gradually at both Ends; these have no Foot Stalks, but their Bale embraces the Stalks half round; the upper Part of the Stalk is adorned by a short loose Spike of yellow Flowers, almost as large as those of the great yellow Sort before-mentioned, but shorter. This flowers in May, and the Seeds ripen in Autumn.

All these Sorts should be sown in Autumn, for if the Seeds are sown in Spring, they commonly fail, or at least lie a whole Year in the Ground before they vegetate. The Plants are biennial (except the 8th Sort) and perish soon after their Seeds are ripe.

DIOSCOREA. Plum. N. Lin. Gen. Pl. 995.

The Characters are,

It hath male and female Flowers in different Plants, the male Flowers have a Bell-shaped Perianthium of one Leaf cut into 6 Parts, but have no Petals or Empalement; they have 6 short hairy Stamina, terminated by single Summits. The female Flowers have the same Perianthium as the male; they have no Petals, but have a small 3 cornered Germen, supporting 3 Styles, crowned by single Stigmas; the Perianthium becomes a triangular Capsule with 3 Cells, opening with 3 Valves, containing 2 compressed bordered Seeds in each.

The Species are,

1. DIOSCOREA foliis cordatis alternis, caule laevi. Hort. Cliff. 459. Dioscorea with Heart-shaped Leaves placed alternate and a smooth Stalk. This is the Dioscorea scandens, foliis tamni fructu racemoso. Plum. Nov. Gen. 9. Climbing Dioscorea with black Briony Leaves and Fruit growing in long Bunches.

2. DIOSCOREA foliis hastato-cordatis, caule laevi, racemis longissimis. Dioscorea with Spear-pointed, Heart-shaped Leaves, a smooth Stalk, and very long Bunches of Flowers. This is the Dioscorea scandens, fructu racemoso. Houst. Mss. Climbing Dioscorea with Fruit growing in Bunches.

3. DIOSCOREA scandens, folio subrotundo acuminato fructu racemoso. Houst. Mss. Climbing Dioscorea with a roundish pointed Leaf and Fruit growing in long Bunches.

4. DIOSCOREA foliis cordatis, caule alato bulbifera. Flor. Zeyl. 360. Dioscorea with Heart-shaped Leaves and a winged Stalk bearing Bulbs. This is the Volubilis nigra, radice albâ aut purpureâ maxima tuberosa esculenta, caule membranulis extantibus alato, folio cordato nervoso. Sloan. Cat. Jam. 46. The Yam or Yammer.

5. DIOSCOREA foliis cordatis acuminatis, nervis lateralibus ad medium folii terminatis. Flor. Virg. 121. Dioscorea with Heart-shaped Leaves ending in acute Points, and lateral Veins terminating in the Middle of the Leaves.

The 1st Sort grows naturally in most of the Islands in the West-Indies, I received the Seeds from Jamaica, where the late Dr. Houstoun found it growing plentifully. This hath slender climbing Stalks, which fix themselves, to any Support near them, and rise to the Height of 18 or

or 20 Feet; these are garnished with Heart-shaped Leaves ending with acute Points, and have 5 longitudinal Veins, which arise from the Foot Stalk, and diverge toward the Sides, but meet again at the Point of the Leaves. They stand upon pretty long Foot Stalks; from the Base of which arise the branching Spikes of Flowers, which are small, and have no Beauty; the female Flowers are succeeded by 3 cornered oblong Capsules, having 3 Cells, each containing 2 compressed Seeds.

The 2d Sort differs from the first in the Shape of their Leaves, these having 2 round Ears at their Base but the Middle extends to an acute Point, like that of an Halbert. The Bunches of Flowers are longer, and they are looser placed than those of the former Sort.

The 3d Sort hath broad round Heart-shaped Leaves, which end in acute Points; these have many longitudinal Veins which arise from the Foot Stalk, and diverge to the Side, but afterward join at the Point of the Leaf; the Flowers come out on long loose Strings standing on short Foot Stalks; the female Flowers are succeeded by 3 cornered oblong Capsules with 3 Cells having compressed bordered Seeds.

The 4th Sort hath triangular winged Stalks, which trail upon the Ground and extend a great Length; these frequently put out Roots from their Joints, as they lie on the Ground, whereby the Plants are multiplied. The Roots are eaten in many Parts of both Indies, where the Plants are much cultivated.

The 5th Sort grows naturally in *Virginia* and in other Parts of *North America*; this hath a smooth Stalk which climbs on the neighbouring Plants, and rises 5 or 6 Feet high, garnished with Heart-shaped Leaves, placed sometimes alternate, and at others, opposite; they are covered with small Hairs, and have several longitudinal Veins. The Flowers come out from the Side of the Stalk as the other Sorts, but have no Beauty. These Plants are preserved in some curious Botanic Gardens, for Variety, but having no Beauty, few Persons allow them a Place, especially as all the Sorts except the last, require a good Stove to preserve them through the Winter in *England*.

These Plants may be propagated by laying their Branches into the Ground, which in 3 Months will put out Roots, and may then be taken from the old Plants, and planted in separate Pots, which should be plunged into the Tan Bed in the Stove; during Winter these Plants should have but little Water, but in Summer when they are growing vigorously, they should be watered 3 or 4 times a Week, and in warm Weather the Glasses should be opened to admit a large Share of free Air. These Plants rarely flower in *England*, but when the Seeds are sent from *America*, they should be immediately sown in Pots and plunged into a hot Bed, where if the Seeds are sown early in Spring the Plants will come up the same Season, but when sown late, they often remain in the Ground till the following Spring before they vegetate; therefore when the Plants do not come up the first Season, the Pots should be screened from Frost in Winter, and put into a new hot Bed in Spring, which will bring them up, if the Seeds were good.

The 4th Sort is much cultivated in the Islands of *America*, and is of great Use for feeding the Negroes; the white People make Puddings of their Roots, when

ground to a Sort of Flour. This Plant is supposed to have been brought from the *East* to the *West-Indies*; for it has not been discovered to grow wild in any Part of *America*; but in the Island of *Ceylon*, and on the Coast of *Malabar*, it grows in the Woods, and there are in those Places a great Variety of Sorts.

The Sort chiefly cultivated in the *West-Indies*, has a Root as big as a Man's Leg, of an irregular Form, and a dirty brown Colour on the Outside; but when cut, it is white and mealy within. The Stalks are triangular and winged; the Leaves are Heart-shaped, having two Ears, somewhat like those of *Arum*. These Stalks climb to the Height of 10 or 12 Feet, when they grow near Trees or Shrubs, to which they fasten themselves, otherwise they trail upon the Ground.

This Plant is propagated by cutting the Root in Pieces, observing to preserve an Eye or Bud to each, as practised in planting Potatoes; each of these being planted will grow, and produce 3 or 4 large Roots: In *America* they are commonly 6 or 8 Months in the Ground before the Roots are taken up for Use. The Roots are roasted or boiled, and eaten by the Inhabitants; and sometimes made into Bread.

In some curious Gardens this Plant is preserved for Variety; but it is so tender as not to live in *England*, unless placed in a warm Stove; as these Roots are frequently brought from *America*, so whoever hath an Inclination to see the Plant, may cut them in the Manner before described; and plant each Piece in a Pot filled with fresh Earth, plunge them into a hot Bed of Tanner's Bark, and give them little Water until they shoot, lest they should rot. With this Management I have had the Shoots 10 Feet high; but the Roots have not grown to any great Size with me. This Plant will not thrive in the open Air, in the warmest Time of the Year; so must constantly be kept in the Bark Stove.

DIOSMA. *Lin. Gen. Plant.* 241. *Spiræa. Com. Rar. Plant.* 2. *African Spiræa vulgo.*

The Characters are,

The Flower hath a permanent Empalement, which is divided into 4 acute Segments, plain at their Base; it hath 5 obtuse Petals which spread open and are as long as the Empalement; it hath 5 Stamina terminated by oval erect Summits, and a 5 pointed, hollow Nectarium sitting on the Germen, from which arises a single Style, crowned by an obsolete Stigma. The Germen becomes a Fruit composed of 5 compressed Capsules, which open Lengthways, each inclosing one smooth oblong Seed.

The Species are,

1. *DIOSMA foliis subulatis acutis oppositis.* *Hort. Cliff.* *Diosma* with acute Awl-shaped Leaves placed opposite. This is the *Spiræa Africana*, *foliis cruciatim positis.* *Com. Rar.* *African Spiræa* with Leaves in Form of a Cross.

2. *DIOSMA foliis linearibus hirsutis.* *Hort. Cliff.* 71. *Diosma* with narrow hairy Leaves. This is the *Spiræa Africana odorata*, *foliis pilosis.* *Com. Rar. Plant.* 3. *Tab.*

3. Sweet *African Spiræa* with hairy Leaves.

3. *DIOSMA foliis linearibus acutis glabris, subtus bifarium punctatis.* *Lin. Sp. Plant.* 198. *Diosma* with smooth narrow acute Leaves, spotted on their under Side. *Spiræa Africana odorata*, *floribus suaverubentibus.* *Com. R. Pl.* Sweet *African Spiræa* with soft red Flowers.

4. *DIOSMA foliis lineari-lanceolatis subtus convexis, bifarium*

faridm imbricatis. Lin. Sp. Plant. 198. *Diosma* with narrow Spear-shaped Leaves, convex on their under Side and imbricated two Ways. This is the *Spiraea Africana erice baccifera foliis*. Raij. Hist. 91. African *Spiraea* with Leaves like the Berry bearing Heath.

The 1st Sort rises to the Height of 3 Feet; the Branches are very long and slender, and are produced from the Stem very irregularly: the Leaves are placed Crossways, and are pointed; these are every Evening closed up to the Branches: The Flowers are produced along the Branches from between the Leaves; and in the Evening, when these Flowers are expanded, and the Leaves are closely embracing the Stalks, the whole Plant appears, as if covered with Spikes of white Flowers; and as these Plants continue a long Time in Flower, they make a fine Appearance when the Plants are intermixed with other Exoticks in the open Air.

The 2d Sort has been long known under the Title of *Spiraea Africana odorata, foliis pilosis*, or Sweet-scented African *Spiraea*, with hairy Leaves. This Sort makes a very handsome Shrub, growing to the Height of 5 or 6 Feet: The Stalks are of a fine Coral Colour; the Leaves come out alternately on every Side of the Branches, which are narrow-pointed and hairy: The Flowers are produced in small Clusters at the End of the Shoots, which are small and white; these are succeeded by starry Seed Vessels, having 5 Corners, like those of the starry Anise, each of these Corners is a Cell, having one smooth shining oblong black Seed: These Seed Vessels abound with a Resin, which affords a grateful Scent, as doth also the whole Plant.

The 3d Sort is of humbler Growth than either of the former, seldom rising above 2 Feet high, and spreads into many Branches; the Leaves are smooth, and resemble those of the Heath; and the Plant from thence had the Name of *Erica Aethiopica*, &c. given it by Dr. Plukenet: The Flowers are produced in Clusters, at the End of the Branches, like those of the 2d Sort; but are smaller, and the Bunches not so large.

All these Plants are propagated by Cuttings, which may be planted during any of the Summer Months, in Pots filled with light fresh Earth, and plunged in a moderate hot Bed, where they should be shaded in the Day Time from the Sun, and frequently refreshed with Water; in about 2 Months the Cuttings will have taken Root, when they should be each transplanted into a small Pot, and placed in a shady Situation until the Plants have taken fresh Root, when they may be placed among other exotick Plants, in a sheltered Situation: These Plants may remain abroad until the Beginning of October or later, if the Season continues favourable; for they only require to be sheltered from Frost; so that in a dry airy Green-house they may be preserved very well in Winter; and in Summer, exposed to the open Air with other Green-house Plants.

These Plants grow naturally at the Cape of Good Hope, from whence the Seeds were sent to Europe, where some of the Species have been long preserved in the Gardens of the Curious.

The 2d Sort frequently ripens Seeds in England; but if they are not sown soon after ripe, they rarely grow; and these commonly lie a whole Year in the Ground.

DIOSPYROS. Lin. Gen. Plant. 1027. *Guaiacana*. Tournef. Inst. R. H. 600. The Indian Date Plumb.

The Characters are,

It hath hermaphrodite and female Flowers on the same Plant, and male Flowers on separate Plants; the hermaphrodite Flowers have a large obtuse permanent Emplacement of one Leaf, divided into 4 Parts; the Flower hath one Petal, shaped like a Pitcher, and cut at the Brim into 4 Segments which spread open; it hath 8 short bristly Stamina firmly joined to the Emplacement terminated by oblong Summits which have no Farina. In the Center is situated a roundish Germen, supporting a single quadrisid Style crowned by an obtuse bifid Stigma; the Germen becomes a large globular Berry with many Cells, each including one oblong compressed hard Seed. The male Flowers have a one leaved Emplacement, cut into small acute Segments; the Petal is thick and four cornered, cut into 4 obtuse Segments which turn backward; they have 8 short Stamina terminated by long acute twin Summits, but have no Germen.

The Species are,

1. *DIOSPYROS foliorum paginis discoloribus*. Lin. Sp. Plant. 1057. *Diospyros*, with the Surface of the Leaves of two Colours. This is the *Guaiacana*. J. B. 2. 138. The Indian Date Plumb.

2. *DIOSPYROS foliorum paginis concoloribus*. Lin. Sp. Plant. 1057. *Diospyros* with the Surface of the Leaves of one Colour. This is the *Guaiacana Virginiana Pishamin dicta*. Boerb. Ind. alter. 2. The Pishamin or Persimon, and by some Pitchumon Plumb.

The 1st Sort is supposed to be a Native of Africa; and was transplanted from thence into several Parts of Italy, and also the South of France. The Fruit of this Tree is by some supposed to be the Lotus, which Ulysses and his Companions were enchanted with. This is a Tree of a middling Growth in the warm Parts of Europe, where there are several of them upward of 30 Feet high; but particularly in the Botanick Garden at Padua there is one very old Tree, which has been described by some of the former Botanists, under the Title of *Guaiacum Patavinum*. This Tree produces Plenty of Fruit every Year; from the Seeds of which many Plants have been raised. In England there are none of these Trees, but what have been raised within a few Years past, in the Physick Garden at Chelsea; for the Seeds of which I was obliged to his Excellency the Chevalier Rathgeb, his Imperial Majesty's Minister at Venice; who has also supplied me with many other curious Plants, Trees, and Fruits, from different Parts of the World; where his extensive Correspondence has been employed to collect whatever rare Plants he could procure; and his Generosity in communicating what Seeds and Plants he can procure to the Physick Garden at Chelsea, requires this publick Acknowledgement.

The 2d Sort is a Native of America; but particularly in Virginia and Carolina great Plenty of these Trees grow in the Woods. The Seeds are frequently brought to England, where the Trees are now become pretty common in the Nurseries about London. This rises to the Height of 12 or 14 Feet; but generally divides into many irregular Trunks near the Ground; so that it is very rare to see a handsome Tree of this Sort. This produces Plenty of Fruit in England; but they never come to Perfection:

In *America* the Inhabitants preserve the Fruit until it be rotten (as is practised by Medlars in *England*;) when they are esteemed a pleasant Fruit.

These are both propagated by Seeds, which come up very well in the open Ground; but if sown on a moderate hot Bed, the Plants will come up much sooner, and make a greater Progress; but in this Case the Seeds should be sown in Pots or Boxes of Earth, and plunged into the hot Bed; because the Plants will not bear transplanting till Autumn, when the Leaves fall off; so that when the Plants are up, and have made some Progress, they may be inured by Degrees to the open Air; and in June they may be wholly exposed, and may remain abroad until November; when it will be proper to set the Pots under a hot Bed Frame to protect them from hard Frost, which, while they are very young, may kill the Tops of the Plants; but they must have as much free Air as possible in mild Weather: The following Spring, before the Plants begin to shoot, they should be transplanted into a Nursery in a warm Situation; where they may be trained up for 2 Years, and then removed to the Places where they are designed to remain. These are both hardy enough to resist the greatest Cold of this Country, after the Plants have acquired Strength.

DIPSACUS. *Lin. Gen. Plant.* 107. *Tourn. Inst.* The Teazel; in French, *Chardon à Bonnetier*.

The Characters are,

It hath many Flowers collected in one common Perianthium, which is permanent; the Flowers have but one Petal, which is tubular, and cut into 4 Parts at the Top, which are erect. They have 4 hairy Stamina as long as the Petal, terminated by prostrate Summits; the Germen is situated below the Flower supporting a slender Style, crowned by a single Stigma. The Germen becomes a Column-shaped Seed, inclosed in the common conical Fruit, which is divided by long prickly Partitions.

The Species are,

1. **DIPSACUS foliis sessilibus serratis, aristis fructibus erectis.** Teazel with sawed Leaves set close to the Stalks and erect Beards to the Fruit. This is the *Dipsacus sylvestris*. *Dod. Pempt.* 735. Wild Teazel.

2. **DIPSACUS foliis connatis, aristis fructibus recurvis.** Teazel with Leaves joined at their Base, and the Beards of the Fruit recurved. This is the *Dipsacus sativus*. *Dod. Pempt.* 735. Cultivated Teazel.

3. **DIPSACUS foliis connatis sinuatis.** *Lin. Sp. Plant.* 97. Teazel with sinuated Leaves joined at their Base. This is the *Dipsacus folio laciniato*. *C. B. P.* 385. Teazel with a lacinated Leaf.

4. **DIPSACUS foliis petiolatis appendiculatis.** *Hort. Upsal.* 25. Teazel with Foot Stalks having Appendices. This is the *Dipsacus sylvestris, capitula minore, f. Virga. Pastoris minor*. *C. B. P.* 385. Wild Teazel with a smaller Head, or smaller Shepherd's Rod.

The 1st of these is very common on dry Banks, in most Parts of *England*; and is seldom cultivated.

The 4th Sort grows naturally in many Places near *London*, and is rarely admitted into Gardens.

The 3d Sort grows naturally in *Alsace*, and is kept in Botanick Gardens for Variety, this differs from the wild Teazel in having the Leaves deeply cut and jagged.

But it is the 2d Sort only which is cultivated for Use, which is called *Cardus Fullorum*, or *Fullonum*, being of

singular Use in raising the Knap on Woollen Cloth; for which Purpose there are great Quantities of this Plant cultivated in the West Country.

This Plant is propagated by sowing the Seeds in March, upon a Soil that has been well dried: About one Peck of this Seed will sow an Acre: for the Plants should have Room to grow, otherwise the Heads will not be so large, nor in so great Quantity. When the Plants are come up, you must hoe them as is practised for Turneps, cutting down all the Weeds, and singling out the Plants to about 6 or 8 Inches Distance; and as they advance, and the Weeds begin to grow again, you must hoe them a 2d Time, cutting out the Plants to a wider Distance; for they should be, at last, left at least a Foot asunder: And you should be particularly careful to clear them from Weeds, especially the first Summer; for when the Plants have spread so as to cover the Surface of the Ground, the Weeds will not so readily grow between them. The 2d Year after sowing, the Plants will shoot up Heads, which will be fit to cut about the Beginning of August; at which Time they should be cut, and tied up in Bunches, setting them in the Sun, if the Weather be fair; but if not, they must be set in Rooms to dry them. The common Produce is about 160 Bundles or Staves upon an Acre, which they sell for about one Shilling a Stave. Some People sow Caraway and other Seeds amongst their Teazels; but this is not a good Method; for the one spoils the other; nor can you so easily clear them from the Weeds, as when alone. Dr. *Linnaeus* supposes this to be only a feminal Variety of the common wild Teazel; but I have cultivated both the Sorts more than thirty Years, and have never found either of them alter.

DITTANY, the white. See *Dictamnus*.

DOCK. See *Lapathum*.

DODARTIA. *Lin. Gen. Plant.* 698. *Tourn. Cor.*

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, Bell-shaped, and cut into 5 Parts at Top; the Flower hath one Petal, is ringent, having a cylindrical flexed Tube much longer than the Emplacement; the upper Lip rises and is indented, the lower Lip spreads open and is trifid, the middle Segment being narrow. It hath 4 Stamina which incline to the upper Lip, two of which are shorter than the other; they are terminated by small roundish Summits. In the Center is a round Germen, supporting an Awl-shaped Style, crowned by a bifid obtuse Stigma. The Germen becomes a globular Capsule with 2 Cells filled with small Seeds.

The Species are,

1. **DODARTIA foliis linearibus integerrimis glabris.** *Lin. Sp. Plant.* 633. *Dodartia* with very narrow smooth entire Leaves. This is the *Dodartia Orientalis*, flore purpurascens. *Tourn. Cor.* 47. Eastern *Dodartia* with a purplish Flower.

2. **DODARTIA foliis radicalibus oblongo-ovatis, serratis, caulibus linearibus integerrimis floribus spicatis terminalibus.** *Dodartia* with oblong, oval, sawed Leaves at the Bottom, those on the Stalks, narrow and entire, and Flowers growing in Spikes at the End of the Stalks. This is the *Linaria bellidis folio*. *C. B. P.* 212. Toad Flax with a Daisy Leaf.

The 1st Sort was discovered by Dr. *Tournefort* near Mount

Mount *Ararat* in *Armenia*, from whence he sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and from thence most of the curious Gardens in *Europe* have been supplied with it. This Plant having Characters which are different from all those of *Tournefort's* Institutions, he constituted this Genus, and gave it the Title from Monsieur *Dodart*, Member of the Royal Academy of Sciences at *Paris*, and Physician to Her Royal Highness the Princess of *Conti*.

It hath a perennial Root which creeps far under the Surface, and sends out new Stalks at a great Distance from the Parent Plant; these Stalks are firm, a little compressed, and grow a Foot and a Half high, sending out several Side Branches; these are garnished with long fleshy narrow Leaves placed opposite, of a deep green Colour; those on the lower Part of the Stalk are shorter and broader than those above, and have 2 or 3 sharp Indentures on their Edges, but those on the upper Part of the Stalk are entire; and at these Joints the Flowers come out singly, on each Side the Stalk sitting close to it; these are near an Inch long, the Bottom is tubulous, but divides into 2 Lips above, the upper Lip is hollow like a Spoon, the convex Side standing upward, and is divided into 2 Parts, the lower Lip is divided into 3 Parts, the Middle being the narrowest. The Flower is of a deep purple Colour, and appears in *July*, and is rarely succeeded by Seeds in *England*. It propagates very fast by its creeping Roots, so that when it is once established in a Garden, it will multiply fast enough; it loves a light dry Soil, and may be transplanted either in Autumn when the Stalks decay; or in Spring before the new Stalks arise.

The 2d Sort is a biennial Plant, which perishes soon after the Seeds are ripe; this sends out from the Root several oblong Leaves, near 4 Inches long, narrow at their Base, but increases in Width upward, where it is about an Inch broad, rounded at the End, and deeply fawed on the Edges; between these arise the Stalks which grow a Foot high, their lower Parts being garnished with Leaves of the same Form as the lower Leaves, but much smaller, the upper Leaves are very narrow and entire. The Flowers grow in Spikes on the Top of the Stalks, they are very small and white, but shaped like those of the former Sort.

This is propagated by Seeds, which should be sown in Autumn soon after they are ripe, upon a Border of light Earth, where they are designed to remain. When the Plants appear the following Spring, they must be thinned, and kept clean from Weeds, which is all the Culture they require; the 2d Year they will flower and seed, after which the Plants decay; when the Seeds are sown in Spring the Plants never come up the same Year.

DOG'S TOOTH. See *Erythronium*.

DOG-WOOD. See *Cornus*.

DORIA. See *Solidago* & *Othonna*.

DORONICUM. *Lin. Gen. Plant.* 862. *Tourn. Inst. R. H.* 487. *Tab.* 277. Leopard's Bane.

The Characters are,

It hath a Flower composed of several hermaphrodite Florets, which are situated in the Center, and form the Disk, and of female Florets which compose the Rays; these are included in one common Empalement, which hath a double Series of Leaves, as long as the Rays. The hermaphrodite

Florets are Funnel-shaped and cut into 5 Parts at Top; these have 5 short hairy Stamina, terminated by cylindrical Summits. In the Bottom is situated the Germen supporting a slender Style crowned by an indented Stigma; the Germen becomes a single oval compressed Seed crowned with hairy Down. The female Flowers are formed like a Tongue spread out, and compose the Border; these have a Germen supporting a Style crowned by 2 reflexed Stigmas, but have no Stamina; the Germen becomes a single furrowed Seed covered with a hairy Down.

The Species are,

1. *DORONICUM foliis cordatis obtusis, radicalibus petiolatis, caulinis amplexicaulibus.* *Lin. Mat. Med.* 394. Leopard's Bane with obtuse Heart-shaped Leaves, those from the Root having Foot Stalks, and those above embracing the Stalks. This is the *Doronicum maximum*. *C. B. P.* 184. Greatest Leopard's Bane.

2. *DORONICUM foliis ovatis acutis, subdentatis, ramis alternis.* *Hort. Cliff.* 411. Leopard's Bane with oval pointed leaves, indented at Bottom, and alternate Branches. This is the *Doronicum plantaginifolium*. *C. B. P.* 184. Leopard's Bane with a Plantain Leaf.

3. *DORONICUM foliis lanceolatis, denticulatis, subtus tomentosis, caule unifloro.* *Prod. Leyd.* 160. Leopard's Bane with Spear-shaped indented Leaves, woolly on their under Side and one Flower on a Stalk. This is the *Doronicum Helveticum incanum*. *C. B. P.* 185. Hoary Helvetian Leopard's Bane.

4. *DORONICUM caule nudo simplicissimo unifloro.* *Hort. Cliff.* Leopard's Bane with a naked single Stalk having one Flower. This is the *Bellis sylvestris media caule carenti*. *C. B. P.* Middle wild Daisy having no Stalk.

The 1st Sort grows naturally in *Hungary* and on the *Helvetian* Mountains, but is frequently preserved in the *English* Gardens. It hath thick fleshy Roots divided into many Knots or Knees, sending out strong fleshy Fibres, which penetrate deep into the Ground, and from these arise in Spring, a Cluster of Heart-shaped Leaves, which are hairy, and stand upon Foot Stalks; between these arise the Flower Stalks, which are channeled and hairy, growing near 3 Feet high, putting out one or two smaller Stalks from the Side, which grow erect, and are garnished with one or two Heart-shaped Leaves closely embracing the Stalks with their Base; each Stalk is terminated by one large yellow Flower, composed of about 24 Rays or female Florets, which are about an Inch long, plain, and indented in 3 Parts at the Top. In the Center is situated a great Number of hermaphrodite Florets, which compose the Disk; these are tubulous and slightly cut at the Top in 5 Parts. The Flowers appear in *May*, and are succeeded by Seeds, which ripen in *July*; these are crowned by a hairy Down, which serves to convey them to a Distance.

This Plant multiplies very fast by its spreading Roots and if the Seeds are permitted to scatter, they will produce Plants wherever they happen to fall, so that it becomes a Weed where it is once established; it loves a moist Soil and a sandy Situation.

The 2d Sort hath oval Leaves ending in acute Points, these are indented on their Edges toward their Base, but their upper Parts are entire; the Stalks rise about 2 Feet high and each is terminated by a large yellow Flower, like those of the former Sort; the Stalks have

2 or 3 Leaves, which are placed alternately, and their Base fits close to the Stalks, these are not so hairy as those of the former Sort; it flowers about the same Time with that, and the Seeds ripen well in England. This grows naturally in Portugal, Spain, and Italy, but is equally hardy with the first, and multiplies in as great Plenty; the Root is perennial.

The 3d Sort hath longer Leaves than either of the former, covered with a hoary Down on their under Side, and indented on their Edges; the Stalks are single and have seldom more than one Leaf on each; these grow a Foot and Half high, and are terminated by a single Flower on the Top, like those of the former Sorts. This grows naturally on the Pyrenees and Helvetian Mountains. It delights in a moist Soil and shady Situation, and propagates in Plenty either from Seeds, or by parting the Roots; it flowers and Seeds about the same Time with the former.

The 4th Sort grows naturally on the Alps and Pyrenean Mountains; this hath a perennial Root, the Leaves are like those of the lesser Daisy, but longer, and not so broad. The Flower grows on a naked Foot Stalk, near a Foot long; the Roots seldom send out more than 1 Stalk; the Rays are white, and very like those of the common Daisy; the Disk is yellow, and is composed of hermaphrodite Flowers.

This Plant is preserved in Botanic Gardens for Variety, but the Flowers make little better Appearance than those of the common Field Daisy, only they stand on much taller Foot Stalks. It must have a shady Situation, and a moist Soil, otherwise it will not thrive in this Country; it is propagated by parting the Roots for the Seeds do not ripen well in England. I received this from Verona, near which Place it grows naturally.

The Roots of the 1st Sort, have been sometimes used in Medicine, some having commended it as an Expeller of the Poison of Scorpions, but others reckon it a Poison, and affirm that it will destroy Wolves and Dogs.

The other Sorts which have been formerly ranged under this Genus, are now separated, and may be found under the Title *Arnica*.

DORSTENIA. *Plum. Nov. Gen. 29. Tab. 8. Lin. Gen. Plant. 147.* [This plant was so named by Father Plumier, from Dr. Dorsten a German Physician, who published a History of Plants in Folio.] Contrayerva.

The Characters are,

It hath one common plain Involucrum situated vertically upon which sit many small Flowers as in a Disk; these have no Petals, but 4 short slender Stamina terminated by roundish Summits. In the Center is a roundish Germen, supporting a single Style crowned by an obtuse Stigma; the Germen becomes a single Seed, inclosed in the common fleshy Receptacle.

The Species are,

1. **DORSTENIA** *foliis sinuatis obtusis, placenta ovali, marginibus integris.* Contrayerva with obtuse sinuated Leaves, and an oval Placenta with entire Borders. This is the *Dorstenia spondylii folio, dentariae radice.* *Plum. Nov. Gen. 29.* *Dorstenia* with a low Parsnep Leaf, and a Toothwort Root.

2. **DORSTENIA** *foliis cordato-angulatis acutis, placenta quadrangulati dentato.* Contrayerva with angular Heart-shaped acute Leaves, and a quadrangular Placenta

which is indented. This is the *Dorstenia dentariae radice, folio minus laciniato placenta quadrangulati & undulata.* *Houss. Mss.* Contrayerva with a Toothwort Root, a Leaf less cut, and a quadrangular waved Placenta.

3. **DORSTENIA** *foliis palmato-angulatis, angulis acutis, placenta oblonga tetragona.* Contrayerva with angular handed Leaves, whose Angles are very acute, and an oblong four cornered Placenta.

The 1st of these Plants was discovered near Old Vera Cruz in New Spain. The 2d on the rocky Grounds about Campeachy. The third Sort was found in great Plenty in the Island of Tobago. But the Roots of all these Species are indifferently brought over, and used in Medicine, and for Dying.

The 1st Sort sends out several Leaves from the Root, which are about 4 Inches long, and as much in Breadth; these are deeply lacinated in 5 or 7 obtuse Parts, standing upon Foot Stalks near 4 Inches long; they are smooth, and of a deep green. The Stalk which supports the Placenta arises from the Root, and grows near 4 Inches high, upon which the fleshy Placenta is vertically placed; this is of an oval Form about one Inch long, and three Quarters broad. Upon the upper Surface of this, the small Flowers are closely situated, the fleshy Part becoming an Involucrum to them; these are very small, and scarce conspicuous at a Distance, being of an herbaceous Colour.

The 2d Sort sends out several angular Heart-shaped Leaves from the Root, which have Foot Stalks 8 or 9 Inches in Length and very slender; the Leaves are about 3 Inches and a Half long, and almost 4 broad at their Base, the two Ears having 2 or 3 Angles which are acute, and the Middle of the Leaves are extended and end in acute Points like a Halbert; these are smooth and of a lucid green; the Foot Stalk which sustains the Placenta is 9 Inches long, and about half an Inch square, and the upper Surface closely set with small Flowers like the first.

The 3d Sort sends out Leaves of different Forms, some of the lower are Heart-shaped having a few Indentures on their Edges, and ending in acute Points, but the larger Leaves are deeply cut like the Fingers on a Hand, into 6 or 7 acute Segments. These Leaves are 5 Inches long, and 6 broad in the Middle, they are of a deep green, and stand upon long Foot Stalks. The Placenta is very thick and fleshy, an Inch and a Half long, and three Quarters broad, having 4 acute Corners; these have a Number of small Flowers placed on their upper Surface like the other Species.

These Plants are at present very rare in Europe, nor was it known what the Plant was, whose Roots were imported, and had been long used in Medicine in England, until the late Dr. Houssoun informed us: For although Father Plumier had discovered one Species of this Plant, and given the Name of *Dorstenia* to the Genus; yet he seems not to have known, that the Contrayerva was the Root of that Plant.

It will be difficult to obtain these Plants, because the Seeds are seldom to be found good; nor will they grow, if kept long out of the Ground; so that the only sure Method to obtain them is, to have the Roots taken up when their Leaves begin to decay, and planted pretty close

close in Boxes of Earth, which may be brought very safe to England; provided they are preserved from Salt Water, and not over watered with fresh Water in their Passage. When the Plants arrive, they should be transplanted each in a Pot filled with fresh Earth, and plunged into the Bark Stove, which should be kept of a moderate Heat; the Plants must be frequently refreshed with Water, during the Summer Season; but in Winter, when the Leaves are decayed, it should be given to them sparingly. With this Management these Plants may not only be maintained, but may also be increased by parting their Roots in Spring, before the Plants put out their Leaves.

DORYCNium. See Lotus.

DOUGLASSIA. Housf. Gen. Nov.

The Characters are,

The Flower has a short tubulous Empalement indented in 5 Parts at the Brim; it has one Petal with a long incurved Tube, cut at the Top into 5 Segments which are equal and spread open; it has 5 very long Stamina, standing out beyond the Petal, which are equal in Length, terminated by globular Summits, and a roundish Germen, supporting a slender Style, shorter than the Stamina, crowned by a roundish Stigma. The Germen becomes a roundish Capsule having 2 Cells, each including two hard Seeds.

The Title of this Genus was given by the late Dr. Housfoun, in Honour of Dr. James Douglass, Physician to her late Majesty Queen Caroline.

We know but one Species of this Genus, viz.

DOUGLASSIA. This is the *Pauliuro affinis ligustri-folia spinosa, flore monopetalo difformi, fructu sicco subrotundo*. Sloan. Hist. Jam. 25. Tab. 166. fig. 2, 3. Dr. Linnaeus titles it *Volkameria spinis petiolorum rudimentis*, Sp. Plant. 637. *Volkameria* with Spines formed from the Rudiments of the Foot Stalks.

This Plant grows naturally in the Islands of the West-Indies; it has several ligneous Stalks, which rise 10 or 12 Feet high, covered with a white Bark, and garnished with narrow Spear-shaped Leaves, about 2 Inches long, and half an Inch broad in the Middle, drawing to a Point at each End. There are 2 of these Leaves at each Joint which stand opposite, and several smaller of the same Shape which arise at the same Place, under which are placed two small crooked Spines, which appear to be formed of the Rudiment of the Foot Stalks. The Flowers come out in small Bunches upon long Foot Stalks, at the Wings of the Stalk, on each Side placed opposite, toward the End of the Branches, each Bunch containing 5 or 6 white tubulous Flowers upon short Foot Stalks; they are white, having short Tubes, cut into 5 obtuse Segments which spread open, and in the Middle are 5 purple Stamina, which are 3 Times the Length of the Tube. The Germina, which are situated at the Bottom of the Tube, afterwards become a small round dry Capsule having 2 Cells, each containing one hard Seed.

This Plant may be propagated by Cuttings in the same Way as the *Volkameria*; and as the Plants require the same Treatment, the Reader is desired to turn to that Article for Directions to avoid Repetition.

Dr. Linnaeus has supposed this, and the *Ligustroides* of Housfoun to be the same, but they are totally different in Species, if not in Genus; but as I have not seen the

Flowers of the *Ligustroides*, I cannot determine its Genus; for although there have been Plants of it in the Chelsea Garden more than 20 Years, yet they have not produced Flowers, although they are 12 or 14 Feet high.

DRABA. Dillen. Gen. Lin. Gen. Alysson. Tourn. Inst.

The Characters are,

The Flower hath a four-leaved Empalement, which falls off. It hath 4 Petals placed in Form of a Cross, and 6 Stamina, 4 of which are as long as the Empalement, the other 2 are much shorter and incurved; these are terminated by roundish Summits. In the Center is situated a bifid Germen, supporting a permanent Style, crowned by an oblong Stigma. The Germen becomes a very short Capsule with 2 Cells, separated by the swelling Style, which is oblique, and longer than the Capsule. The Valves are parallel to the Middle, and divide the lower Part of the Cell, from the upper, which is open, round, concave, and opens oblique, each Cell containing a single Seed.

The Species are,

1. DRABA *scapo nudo simplici, foliis lanceolatis integerrimis*. Fl. Lapp. 255. Draba with a single naked Stalk, and very entire Spear-shaped Leaves. This is the *Alysson Alpinum, hirsutum luteum*, Tourn. Inst. 217. Yellow hairy Alpine Madwort.

2. DRABA *caulibus nudis, foliis incisis*. Hort. Cliff. 333. Draba with naked Stalks and cut Leaves. *Alysson vulgare, polygoni folio, caule nudo*. Tourn. Inst. Common Madwort with a Knot Grass Leaf and naked Stalk.

3. DRABA *caule nudo, foliis pinnatis ternatisque*. Lin. Sp. Pl. 642. Draba with a naked Stalk, and pinnated and trifoliate Leaves. This is the *Alysson pyrenaicum, perenne, minimum, foliis trifidis*. Tourn. Inst. Least perennial Madwort of the Pyrenes with trifid Leaves.

4. DRABA *caule ramoso, foliis cordatis dentatis amplexicaulis*. Prod. Leyd. 33. Draba with a branching Stalk, and Heart-shaped indented Leaves embracing the Stalks. This is the *Alysson veronica folio*. Tourn. Inst. 217. Madwort with a Speedwell Leaf.

5. DRABA *caule ramoso, foliis ovatis sessilibus dentatis*. Lin. Sp. Pl. 643. Draba with a branching Stalk, and oval indented Leaves growing close to the Branches. This is the *Alysson Alpinum, polygoni folio incano*. Tourn. Inst. Alpine Madwort with a hoary Knot Grass Leaf.

6. DRABA *foliis caulinis numerosis incanis, siliculis obliquis*. Flor. Suec. 526. Draba with many hoary Leaves on the Stalks, and oblique Pods. *Lunaria siliqua oblonga intorta* Tourn. Moonwort with an oblong intorted Pod.

The 1st Sort grows naturally on the Alps, and other mountainous Parts of Europe; this is a very low Plant, which divides into small Heads, like some Sorts of Houseleek, and from thence it was titled *Sedum Alpinum*, &c. or *Alpine Houseleek*. The Leaves are short, narrow, and very hairy; from each of these Heads come out a naked Flower Stalk an Inch and a Half high, terminated by loose Spikes of yellow Flowers, having four obtuse Petals placed in Form of a Cross; when these fade, they are succeeded by triangular, or Heart-shaped Pods, which are compressed, and inclose three or four roundish Seeds. It flowers in March, and the Seeds ripen the Beginning of June.

This Plant is easily propagated by parting the Heads; the best Time for doing this is in Autumn, because it shoots up to flower very early in the Spring. It should have

have a moist Soil and shady Situation, where it will thrive and flower annually. It requires no other Culture but to keep it clean from Weeds.

The 2d Sort is an annual Plant, which grows naturally upon Walls, and dry Banks, in many Parts of England, to is never cultivated in Gardens. This flowers in April, and the Seeds ripen in May.

The 3d Sort grows naturally on the Alps, and other mountainous Parts of Europe. This is a low perennial Plant, which seldom rises more than 2 Inches high; it has a shrubby Stalk, which divides into many small Heads like the 1st Sort. The Leaves are small, some of them are winged, have 5 short narrow Lobes, placed on a Mid-rib, others have but three. The Flowers come out in Clusters, sitting close to the Leaves. They are of a bright purple Colour, and appear early in Spring. This is a perennial Plant, which may be propagated by parting the Heads in the same Manner as the first, and requires the same Treatment.

The 4th Sort grows naturally in shady Woods in many Parts of Europe, and is but seldom kept in Gardens, unless for Variety. It is an annual Plant, rising with an upright branching Stalk, about 10 Inches high, garnished with Heart-shaped indented Leaves, which embrace the Stalks with their Base. The Stalks are terminated by loose Spikes of white Flowers, which appear the Beginning of May; in June the Seeds ripen, and the Plants soon after decay. If the Seeds are permitted to scatter, the Plants will come up without Trouble. It delights in a shady Situation and moist Soil.

The 5th Sort is an annual, which grows in shady Woods in the northern Parts of Europe. This is like the former Sort, but the Leaves are larger, rounder, and do not embrace the Stalks; the Flowers are yellow. If the Seeds are permitted to scatter, the Plants will maintain themselves if they have a shady Situation.

The 6th Sort rises with an upright Stalk, about a Foot high, the lower Part being very closely garnished by oblong hoary Leaves, which are indented on their Edges.

The upper Part of the Stalk puts out 2 or 3 short Branches; these are almost naked of Leaves, as is also the upper Part of the Stalk. The Flowers come out loosely on the Top of the Stalk; they are composed of 4 small white Petals placed in Form of a Cross, which are succeeded by oblong twisted Pods containing 3 or 4 roundish compressed Seeds. It flowers in June, and the Seeds ripen in July. This grows naturally in the North of England, and in Wales.

This Plant seldom lasts more than 2 Years; if the Seeds are sown in Autumn in a shady Border, the Plants will come up in Spring, or where they are permitted to scatter, the Plants will rise without any Trouble.

DRACO ARBOR. See Palma.

DRACO HERBA. [*i. e.* Dragon's-wort.] Tarragon, vulg. See Abrotanum.

DRACOCEPHALUM. Lin. Gen. Plant. 648. *Dracocephalon*. Tourn. Inst. R. H. 181. Tab. 83. [of δράκων, a Dragon, and κεφαλή, a Head.] *i. e.* Dragon's Head.

The Characters are,

The Flower hath a short permanent Empalement of one Leaf, which is tubulous. It hath one ringent Petal, with a Tube the Length of the Empalement, with large oblong inflated Chaps. The upper Lip is obtuse and arched, the

under Lip is trifid, the 2 Side Segments are erect, the Middle turns downward, and is indented. It hath 4 Stamina, situated near the upper Lip, 2 being shorter than the other, and are terminated by Heart-shaped Summits. It hath a four parted Germen, supporting a slender Style, situated with the Stamina, and crowned by a bifid reflexed Stigma. The Germen becomes 4 oval, oblong Seeds, inclosed in the Empalement.

The Species are,

1. *DRACOCEPHALUM foliis simplicibus, floribus spicatis* Hort. Cliff. 308. American Dragon's Head with single Leaves and spiked Flowers. This is the *Dracocephalon Americanum*. Breyn. P. American Dragon's Head.

2. *DRACOCEPHALUM floribus spicatis, foliis compositis*. Hort. Cliff. Dragon's Head with spiked Flowers and compound Leaves. *Moldavica Americana trifolia odore gravi*. Tourn. Inst. Three-leaved American Balm, having a strong Smell, commonly called Balm of Gilead.

3. *DRACOCEPHALUM floribus verticillatis, foliis ovato-lanceolatis*. H. C. 308. Dragon's Head with Flowers growing in Whorls, and oval Spear-shaped Leaves. *Moldavica betonica folio, flore caeruleo*. Tourn. Inst. Moldavian Balm, with a Betony Leaf, and blue Flower.

4. *DRACOCEPHALUM floribus verticillatis, foliis floralibus orbiculatis*. Hort. Cliff. 308. Dragon's Head with Flowers growing in Whorls, and the upper Leaves round. *Moldavica orientalis minima cymifolia, flore purpurascente*. Tourn. Cor. 11. Lesser Eastern Moldavian Balm with a Willow Leaf and a bluish Flower.

5. *DRACOCEPHALUM floribus verticillatis, bracteis oblongis, serraturis spinosis, foliis tomentosis*. Hort. Up. 166. Dragon's Head with Flowers growing in Whorls, and the little Leaves under the Flowers sawed, ending in Spines, and woolly Leaves. *Moldavica orientalis betonica folio, flore magno violaceo*. Tourn. Eastern Moldavian Balm, with a Betony Leaf, and a large blue Flower.

6. *DRACOCEPHALUM floribus verticillatis, bracteis oblongis ovatis integerrimis, corollis majusculis nutantibus*. Hort. Up. 167. Dragon's Head with Flowers growing in Whorls, the small Leaves under the Flowers oblong and entire, and hanging Flowers much larger than the Empalement. *Moldavica betonica folio, floribus minoribus caeruleis pendulis*. Amman. Moldavian Balm with a Betony Leaf, and smaller blue pendulous Flowers.

7. *DRACOCEPHALUM floribus verticillatis, bracteis oblongis integerrimis, corollis vix calyce majoribus*. Hort. Up. 167. Dragon's Head with Flowers growing in Whorls, the small Leaves oblong and entire, and the Flowers equal with the Empalement. *Moldavica betonica folio, floribus minimis pallide caeruleis*. Moldavian Balm with a Betony Leaf, and very small blue Flowers.

8. *DRACOCEPHALUM floribus verticillatis, bracteis ovatis, serraturis spinosis, foliis lineari-lanceolatis*. Dragon's Head with Flowers growing in Whorls, oval Bractæe having Spines at the Serratures, and very narrow Spear-shaped Leaves. *Moldavica orientalis, salicis folio, flore parvo caeruleo*. Tourn. Cor. 11. Eastern Moldavian Balm with a Willow Leaf, and a small blue Flower.

9. *DRACOCEPHALUM floribus verticillatis foliis ovatis inciso-crenatis, bracteis lanceolatis integerrimis*. Lin. Sp. Plant. 595. Dragon's Head with Flowers growing in Whorls,

Whorls, oval Leaves which are cut and crenated, and Spear-shaped *Braslea*, which are entire.

The 1st Sort is a Native of *North America*, where it grows in the Woods, and by the Sides of Rivers. This Sort rises with an upright Stalk, which is four-cornered, near 3 Feet high, garnished with Spear-shaped Leaves about 3 Inches long, and Half an Inch broad, sitting close to the Stalk; they are sawed on their Edges, and placed by Pairs opposite at each Joint, and sometimes there are 3 Leaves standing round at the same Place. The Flowers grow in long Spikes on the Top of the Stalks; these are of a purple Colour, and make a pretty Variety among other hardy Plants, especially if the Plants are strong and vigorous. This is a perennial Plant which will live in the open Air, but requires a moist Soil, or should be duly watered in dry Weather, otherwise the Leaves will shrink, and the Flowers make no Appearance. As this is hardy, it may be allowed a Place in shady Borders, since it will not ramble, or take up much Room. It flowers in *July*, and continues until the End of *August*, and is propagated by parting the Roots in Autumn.

The 2d Sort is a Native of the *Canary Islands*, and hath been long an Inhabitant in the Gardens; it is usually called by the Gardeners Balm of *Gilead*, from the strong resinous Scent which the Leaves emit on being rubbed. This is a perennial Plant, which rises with several square Stalks, to the Height of 3 Feet or more, becoming ligneous at their lower Parts, and are garnished with compound Leaves at each Joint, which are placed opposite; these have 3 or 5 Lobes, which are oblong, pointed, and sawed on their Edges. The Flowers come out in short thick Spikes on the Top of the Stalks; these are of a pale blue Colour, and are succeeded by Seeds, which ripen very well in *England*. This Plant continues producing Flowers most Part of Summer, it is usually kept in Green-houses; but, in mild Winters, the Plants will live abroad, if they are planted in warm Borders; and those Plants which are kept in Pots, will thrive much better when they are sheltered under a Frame, than if placed in a Green-house, where the Plants are apt to draw up weak, for they should have as much free Air as possible in mild Weather, and only require to be sheltered from severe Frost. This may be propagated by Seeds, which, if sown in Autumn, will more certainly grow, than those which are sown in Spring, but if these are sown in Pots, they must be sheltered under a Frame in the Winter, and if the Plants do not come up the same Autumn, they will arise in Spring, but if the Seeds are sown in the full Ground, it should be in a warm Border; and in hard Frost they should be sheltered, otherwise the young Plants will be destroyed. The Plants may also be propagated by Cuttings; which if planted in a shady Border, any Time in Summer, will very soon take Root, and furnish Plenty of rooted Plants.

The 3d Sort is a Native of *Moldavia*; this has been long preserved in curious Gardens. It is an annual Plant, which rises with branching Stalks a Foot and a Half high, garnished with oblong Leaves, which are placed opposite, and deeply sawed on their Edges. The Flowers come out in Whorls round the Stalks at every Joint; these are blue, and appear in *July*, continuing till the Middle of *August*, and the Seeds ripen in *September*. The

Plants have a strong balsamick Odour, which is to some Persons very agreeable; the Seeds should be sown in small Patches, in Spring, on Borders where they are to remain, and when the Plants come up, they should be thinned where they grow too close, and kept clear from Weeds, which is the only Culture they require. Of this there is a Variety with white Flowers, which is pretty common; this only differs from the other in the Colour of the Flowers, but yet these constantly retain their Difference from Seeds.

The 4th Sort was discovered by Dr. *Tournefort* in the *Archipelago*, who sent the Seeds to the Royal Garden at *Paris*, which have since been communicated to many curious Gardens in *Europe*; this rises with upright Stalks, about a Foot high, which seldom put out Branches; these are garnished with very long narrow Leaves, placed opposite at each Joint, where the Flowers come out in Whorls, almost the whole Length of the Stalks; these are of a pale blue, and appear about the same Time as the former; this Sort has very small Flowers, which make no great Appearance; it is seldom cultivated, except in Botanic Gardens.

The 5th Sort was discovered by *Tournefort*, in the *Levant*; this hath hoary square Stalks, which rise a Foot and a Half high, putting out 2 or 3 Side Branches, garnished with hoary Leaves, near 2 Inches long, and Half an Inch broad, a little indented on their Edges; they are placed opposite at the Joints, just under the Whorls of Flowers, which sit close to the Stalk; these are larger than those of the other Species, and of a fine blue Colour, which between the hoary Leaves of the Plant, makes a pretty Appearance. It flowers and seeds about the same Time as the former Sorts; this is generally treated as an annual, like the former Sort, but the Roots will live 2 Years in a dry Soil. There is a Variety of this with white Flowers, the Seeds of which always produce the same coloured Flowers.

The 6th Sort grows naturally in *Siberia*, from whence the Seeds were sent to the Imperial Garden at *Petersburgh*, and the late Dr. *Amman*, sent me the Seeds. This is an annual Plant, from whose Root come out many square weak Stalks, which grow about 9 Inches long; these are at the Bottom garnished with oval Spear-shaped Leaves about 2 Inches long, and one Inch and a Quarter broad, standing opposite upon pretty long Foot Stalks, and are crenated on their Edges. The upper Part of the Stalks have smaller Leaves, which sit close at the Joints, from whence come out the Flowers in Whorls; they are of a deep blue Colour, and hang downward; these appear at the same Time with the former, and the Seeds ripen in Autumn.

The 7th Sort grows also in *Siberia*, the Seeds of this were sent me with the former. It hath square Stalks, which rise a Foot and a Half high, the lower Leaves are very like those of *Betony*, and stand on very long Foot Stalks. The upper Leaves are small, and sit closer to the Stalks. The Flowers come out in Whorls at every Joint; these are very small, and of a pale purple, or blue Colour, so make little Appearance, but it is preserved in some Gardens for the Sake of Variety.

The 8th Sort grows naturally in the *Levant*. This is an annual Plant, which rises with a square Stalk about a Foot high, sending out 2 small Side Branches from the lower

lower Part. The Leaves are Spear-shaped, and crenated on their Edges; they are placed opposite, and stand on Foot Stalks. The Flowers are small, of a purplish Colour, and come out in Whorls round the Stalks, having two roundish small Leaves (called Bractææ) immediately under them, which are sawed on the Edges, each Serrature ending with a long Hair. This Sort flowers and feeds at the same Time as the former.

All these Sorts are propagated by Seeds, which may be sown either in the Spring or Autumn, in the Places where the Plants are to remain, and will require no other Treatment than the third Sort.

DRACONTIUM. *Lin. Gen. Plant.* 916. *Dracunculus.* *Tourn. Inst.* Dragon, in French, *Serpentaire.*

The Characters are,

It hath a single cylindrical Stalk, on the upper Part of which the Parts of Frustrification are disposed in a singular Manner. The Flowers have no Empalement, but have 5 oval concave Petals, which are equal; they have 7 narrow depressed Stamina the Length of the Petals, terminated by oblong four-cornered twin Summits, which stand erect; they have an oval Germen, supporting a taper Style, crowned by a 3 cornered Stigma. The Germen becomes a roundish Berry, inclosing several Seeds; these are all inclosed in a large fleshy Spatha opening with one Valve.

The Species are,

1. **DRACONTIUM foliis pertusis, caule scandente.** *Lin. Sp. Pl.* 968. Dragon with Leaves having Holes, and a climbing Stalk. *Arum bederaceum, amplis foliis perforatis.* *Plum. Cat.* Climbing *Arum* with large perforated Leaves.

2. **DRACONTIUM scapo brevissimo, petiolo radicato, lacero, foliis tripartitis, laciniis pinnatifidis.** *H. C.* 434. Dragon with a very short Stalk. the Foot Stalk cut, the small Leaves divided in 3 Parts, which terminate in many Points. *Arum polyphyllum, caule scabro punicante.* Many leaved *Arum* with a rough purple Stalk.

3. **DRACONTIUM foliis sagittatis, pedunculis petiolisque aculeatis.** *Flor. Zeyl.* 328. Dragon with Arrow-pointed Leaves, whose Foot Stalks have Spines. This is the *Arum Zeylanicum spinosum, sagittæ foliis.* *Par. Bat.* 75. Prickly *Arum* of Ceylon, with Arrow pointed Leaves.

4. **DRACONTIUM foliis lanceolatis, Amantit.** *Acad.* 2. p. 360. Dragon with Spear-shaped Leaves.

5. **DRACONTIUM acaule, foliis lanceolatis, serratis, spadice declinato.** *Burm. Tab.* 39. Dragon without Stalk, Spear-shaped sawed Leaves, and a declining Stalk. *Arum amplis foliis acuminatis & pergamaceis, ex Insula Sancti Thomæ.* *Plum. Cat.* 4. *Arum* with large pointed Parchment-like Leaves from the Island of St. Thomas.

The 1st Sort grows naturally in the Islands in the West-Indies. This hath slender jointed Stalks, which put out Roots at every Joint, which fasten to the Trunks of Trees, Walls, or any Support near them, and thereby rise to the Height of 25, or 30 Feet. The Leaves are placed alternately, standing on long Foot Stalks; they are 4 or 5 Inches long, and 2 and a Half broad; these have several oblong Holes in each, which on first View appear as if eaten by Insects, but they are natural to the Leaves. The Flowers are produced at the Top of the Stalk, which always swells to a larger Size in that Part, than in any other; these are covered with an oblong Spatha (or Hood) of a whitish green Colour, which

opens longitudinally on one Side, and shews the Pistil, which is closely covered with Flowers, of a pale yellow, inclining to white. When this Plant begins to flower, it seldom advances farther in Height, so that these seldom are more than 7 or 8 Feet high, but the Leaves are much larger on these, than those of the Plants which ramble much farther.

This Plant is easily propagated by Cuttings, which, if planted in Pots filled with poor sandy Earth, and plunged into a hot Bed, will soon put out Roots, if they had none before; but there are few of the Joints which have not Roots; these Plants are tender, so will not live in the open Air in England, therefore the Pots should be placed near the Walls of the Hot-house, against which the Plants will climb, and fasten their Roots in the Wall, and thereby support the Stalks. They should have but little Water in the Winter, but in warm Weather it must be given them 3 or 4 Times a Week, and in Summer the free Air should be admitted in Plenty. These Plants flower either in Spring or Autumn, having no particular Season, but they do not ripen their Seeds in England.

The 2d Sort grows naturally in the Islands of America. I received the Roots from Barbuda. This hath a large knobbed irregular Root, covered with a rugged brown Skin. The Stalk rises about a Foot high, is naked to the Top, where it is garnished with a Tuft of Leaves, divided into many Parts. The Stalk is smooth, of a purple Colour, but full of sharp Protuberances of different Colours, which shine like the Body of a Serpent. The Stalk of the Flower rises immediately from the Root, and is seldom more than 3 Inches high, having an oblong swelling Hood at the Top, which opens Lengthways, shewing the short, thick, pointed Pistil within, upon which the Flowers are closely ranged.

This Sort is tender, so requires a warm Stove to preserve it in England. The Roots must be planted in Pots filled with light Kitchen Garden Earth, and plunged into the Tan Bed in the Stove, where they should constantly remain; in Winter they must be watered sparingly, but in warm Weather, when the Plants are in Vigour, they must be often refreshed, with a little at a Time; with this Management the Plants will flower, but their Roots do not increase here.

The 3d Sort grows naturally in the Island of Ceylon, and in several Parts of India; this hath an oblong thick Root, full of Joints, from which arise several Leaves, shaped like those of the common *Arum*, but their Foot Stalks are covered with rough Protuberances. The Stalk which supports the Flower is short, and set with the like Protuberances, and at the Top is a Hood, or Spatha, about 4 Inches long, as thick as a Man's Finger, which opens longitudinally, and exposes the Pistil, which is set with Flowers. This is a tender Plant, and requires the same Treatment as the former Sort.

The 4th Sort hath Roots like the common *Arum*, from which come out several Spear-shaped Leaves, standing each upon a separate Foot Stalk arising immediately from the Root. This hath not yet flowered in England, so I can give no farther Account of it. This grows naturally in Siberia, so requires a shady Situation, and will bear the greatest Cold of this Country.

The 5th Sort grows naturally in the West-Indies. This hath

hath a Root composed of many Knots and Joints, somewhat like those of *Solomon's Seal*, having scaly Protuberances; from these come out several long Spear-shaped Leaves, which stand upon short Foot Stalks; they are 9 or 10 Inches long, and 3 broad in the Middle, diminishing gradually to both Ends; they are slightly sawed on their Edges, and much veined. The Foot Stalks which support the Flowers are slender, and rise about 6 Inches high; they bend at the Top, so that the Pistil on which the Flowers are placed, hang downward; these are long and slender, the Spatha, or Hood, is small and narrow; this turns backward, and makes Way for the Pistil to come out. This is a tender Plant, so requires the same Treatment as the 2d Sort.

These Plants are preserved in the Gardens of the Curious in *England* and *Holland*, more for Variety, than their Beauty, for except the 1st Sort, there is not any of them which makes much Appearance, that indeed may be suffered to have a Place against the Wall of the Stove, over which it will spread and cover the Wall, and the Leaves remaining all the Year, and so remarkably perforated, make a singular Appearance.

All the other Sorts of Dragon are very tender Plants, so will not live in this Country, unless they are preserved in the warmest Stoves; the several *American* Sorts grow naturally in the Woods in *Jamaica*, and other hot Parts of *America*; the climbing Sorts twist themselves round the Trunks of Trees, into which they fasten their Roots, which are sent from their Joints, and rise to the Height of 30 or 40 Feet. These climbing Sorts are easily propagating by Cuttings, which, being very succulent, may be brought over to *England* in a Box of dry Hay, if they are packed up separate, so as not to injure each other by the Moisture, which is apt to flow out at the Part where they are cut off, which may occasion a Fermentation, and thereby rot the Cuttings. When the Cuttings arrive, they should be planted in small Pots filled with light fresh Earth, and plunged into a hot Bed of Tanners Bark, being careful not to let them have too much Moisture until they have taken Root, lest it rot them; when they have taken Root, they must be frequently refreshed with Water; and when they are grown pretty large, they should be placed in the Bark Bed in the Stove, and placed near some strong Plants, to which they may fasten themselves, otherwise they will not thrive; for though they will send forth Roots at their Joints, which will fasten to the Mortar of the Stove, when placed against the Wall; yet they will not thrive near so well as against a strong Plant, which will afford them Nourishment.

The other Sorts are propagated by Offsets from their Roots; these may be procured from the Countries of their Growth, and should be planted in Tubs of Earth, about a Month before they are put on board the Ship to transport them; these Tubs should be placed in a shady Situation, until they have taken Root. In their Passage they should be carefully preserved from Salt Water, as also not to have too much Water given them, for a little once or twice a Week, at most, while they are in a hot Climate, and, when they come into a cooler, once in a Fortnight, will be sufficient for them; and it should be done sparingly, lest it rot them, for if the Tops of the Plants should decay for Want of Water in

their Passage, if the Roots are not rotted, they will soon recover with proper Care.

When the Plants arrive, they should be transplanted into Pots filled with light fresh Earth, plunged into a hot Bed of Tanners Bark, and gently watered, until they have taken good Root, after which they will require to be frequently refreshed with Water; but as their Stems are very succulent, they must not have too much Moisture. These Plants must be constantly kept in the Stove, where, in hot Weather, they should have fresh Air admitted to them; in Winter they must be kept very warm, otherwise they cannot be preserved here.

These Plants will rise to the Height of 3, 4, or 5 Feet, and will afford a very agreeable Variety among other tender exoticks in the Stove.

DRACUNCULUS PRATENSIS. See *Achillæa*.

DRAGON. See *Dracontium*.

DULCAMARA. See *Solanum*.

DUNGS are designed to repair the Decays of exhausted or worn-out Lands, and to cure the Defects of Lands, which are as various in their Qualities, as the Dungs that are used to meliorate and restore them: some Lands abound too much in Coldness, Moisture, and Heaviness; others are too light and dry; to answer this, some Dungs are hot and light, as that of Sheep, Horses, Pigeons, &c. others are fat and cooling, as that of Oxen, Cows, Hogs, &c.

As the Remedies to be used must be contrary to the Distempers they are to cure; so the Dung of Oxen, Cows, and Hogs, must be given to clean dry light Earths, to make them fatter and closer; and hot and dry Dungs to meliorate cold, moist, and heavy Lands.

There are two peculiar Properties in Dungs, one is to produce a certain sensible Heat, capable of producing some considerable Effect, which Properties are seldom found but in the Dung of Horses and Mules, while it is newly made, and a little moist; the other Property is, to fatten the Earth, and render it more fruitful.

The Dung of Horses and Mules is of admirable Use in Gardens in the Winter Time, because it then animates and enlivens all Things; and, in some Measure, supplies the Office which is performed by the Heat of the Sun in the Summer Time, affording us all the Novelties of the Spring, as Asparagus, Cucumbers, Radishes, Melons, Sallads, &c. Horse Dung is the best Improvement for cold jejune Lands that we can procure in any Quantity; but yet Horse Dung, being used alone, or when it is too new, is prejudicial to some Plants; and if it be spread thin over Lands in the Summer Time, it is of very little Service, because the Sun, drawing out all the Virtue and Goodness of it, renders it little better than Thatch, or dry Straw; and though too much of it can scarcely be used in a Kitchen Garden for Cabbages, Cauliflower, and all other Plants that grow there, and require Abundance of Nourishment; yet it may be a Fault to lay too much of it on Corn Lands, because it produces Abundance of Straw.

In very cold moist Land, I have frequently seen new Horse Dung buried as it came from the Stable, and always observed that the Crops succeeded better, than where the Ground was dressed with very rotten Dung.

Horse Dung being of a hot Nature, is best for cold Lands, and Cow Dung for hot Land; being mixed to-

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gether, they make a very good Manure for most Sorts of Soil, and for some they may be mixed with Mud.

Sheeps Dung and Deers Dung differ not much in Quality, and are esteemed by some, the best of Dungs for cold Clays: Some recommend them to be beat to Powder, and spread very thin over Autumn or Spring Crops, about 4 or 5 Loads to an Acre, after the same Manner as Ashes, Malt Dust, &c. are strewed.

This I have seen practised upon Corn, and also upon Grass Land, to great Advantage for the 1st Year; but these light Dressings do not last long, therefore require to be often repeated.

In *Flanders*, they house their Sheep at Nights in Places spread with clean Sand, laid about 5 or 6 Inches thick; which, being laid on fresh every Night, is cleared out once a Week; this Mixture of Sand and Dung, makes an excellent Dressing for strong Land; for the Dung and Urine of the Sheep is a very rich Manure, bears a considerable Price, and is excellent for all stiff cold Land: Mr. *Quinteney* is of Opinion, that it is the greatest Promoter of Fruitfulness in all Sorts of Ground.

Others recommend Hogs Dung as the fattest and most beneficial of all Sorts of Dungs; and say, that one Load of it will go as far as two Loads of other Dung, that it is the best of all Dungs for Fruit Trees, especially for Pear and Apple Trees in light Soil, and a very rich Dung for Grass. I have often used this Dung to Fruit Trees when it was well rotted, and have found it the most beneficial to them of any Manure.

The Dung of Pigeons, Hens, and Geese, are great Improvers of Meadow or Corn Land: the first of these being the best superficial Improvement, that can be laid on Meadow and Corn Land: But before it is used, it ought to have lain abroad out of the Dove-house some Time, that the Air may have a little sweetened and mollified the fiery Heat that is in it.

Especially it is good for cold, wet, clayey Lands; but it ought to be dried before it be strewed, because it is naturally apt to clod in Wet; and it should be mixed with Earth or Sand to keep it from clinging together, that it may be strewed thin, being naturally very hot and strong.

Some recommend the Dung of Pigeons, and other Fowls, as the best Manure for Asparagus, Strawberries, or Flowers: But this should be rotted and well mixed with the Earth, before it is used to Flowers.

Monsieur *Gentil* approves of Pigeons Dung, as being good for such Trees whose Leaves are apt to turn yellow, if they grow in free Soils that are rather cold than hot, provided the Heat of it has been abated by lying two or three Years in the Dunghill; but this should be applied in Autumn, and in small Quantities.

This being spread about an Inch thick at the Foot of a Tree, whose Leaves are yellow, and being left there till March, he recommends as very useful in cold and moist Soils.

The Dung of Poultry being hot and full of Salts, tends much to facilitate Vegetation; and is abundantly quicker in its Operation, than the Dung of Animals which feed on Herbs.

Sir *Hugh Plat* says, one Load of Grain will enrich Ground more than ten Loads of common Dung; which

if it be true, it is rational to suppose, that if simple Grain, by only Infusion in the Mixture of Composts, has a very good Effect, it will be more powerful when it has passed through the Bodies of Animals.

Human Dung is a great Improver of all cold four Lands, and especially if it be mixed with other Earths or Dungs to give it a Fermentation.

But there is not any Sort of Manure equal to the Cleansing of *London* Streets, for all stubborn clayey Soils; the Parts of which will be better separated, and in a much less Time, with this Manure, than with any other Compost whatever; and where it can be obtained, is extremely well worth procuring, either for Corn, Grass, or Garden Land.

DURANTIA. *Lin. Gen. Pl.* 704. *Castorea*. *Plum. Nov.*

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, which is erect, and cut into 5 acute Segments at the Top, and sits on the Germen; the Flower is of the ringent Kind, with one Petal having a long Tube, which opens at the Top in 2 Lips; the upper Lip is oval, erect, and concave; the under is divided into 4 equal Segments, which are round. It hath 4 short Stamina, situated in the Bottom of the Tube, the 2 Middle being a little shorter than the other, terminated by prostrate Summits; the Germen situated under the Flower, supports a long slender Style crowned by a beaded Stigma. The Germen becomes a globular Berry, terminated by 3 acute Points, having one Cell inclosing 4 angular Seeds.

The Title which was first given by Father *Plumier* to this Genus, was *Castorea*, in Memory of *Castor Durant*, a Physician of *Rome*, who published a History of Plants in *Italian*, printed at *Rome* in 1585. Dr. *Linneus* has now altered the Title, and instead of the Christian Name, he has given it the Surname of the same Person.

The Species are,

1. *DURANTIA spinosa*. *Lin. Sp. Plant.* 637. Prickly *Durantia*. This is the *Castorea repens spinosa*. *Plum. Nov. Gen.* 30. Creeping prickly *Castorea*.

2. *DURANTIA inermis*. *Lin. Sp. Plant.* 637. *Durantia* without Thorns. This is the *Castorea racemosa flore caeruleo, fructu croceo*. *Plum. N. G.* 30. Branching *Castorea* with a blue Flower and Saffron-coloured Fruit.

3. *DURANTIA caule erecto spinoso, foliis ovatis integerrimis, floribus racemosis*. *Durantia* with an upright prickly Stalk, oval entire Leaves, and Flowers growing in long Bunches. This is the *Jasminum folio integro, obtuso, flore caeruleo racemoso, fructu flavo*. *Sloan. Cat. Jam.* 169. *Jasmine* with entire obtuse Leaves, blue Flowers growing in Bunches, and a yellow Fruit.

The 1st Sort hath many trailing Branches, armed with hooked Thorns at every Joint, and garnished with oblong Leaves, placed without Order, and slightly sawed on their Edges; the Flowers come out from the Side of the Stalks in pretty long Bunches, like those of the common Currant, of a pale bluish Colour, and succeeded by brown Berries not unlike the Fruit of the Hawthorn; these have one Cell, and inclose 4 angular Seeds.

The 2d Sort hath a branching woody Stalk, 7 or 8 Feet high; the Branches are garnished with oval Spear-shaped Leaves, 3 Inches long, and one and a Half broad in the Middle; they are sawed on their Edges, of a lucid green Colour, and stand opposite by Pairs. The Flow-

ers are produced in long Bunches at the End of the Branches; these are blue, and succeeded by round yellow Berries, containing 4 angular Seeds.

The 3d Sort rises with a strong woody Stem 10 or 12 Feet High, covered with a white Bark, and divides into many Branches, armed with sharp Thorns on their Side; these are garnished with oval stiff Leaves, one Inch long, and three Quarters broad. The Flowers come out in long Bunches from the End of the Branches, they are blue, and are succeeded by small round yellow Berries, which contain 4 angular Seeds. I received this from *Jamaica*.

As the Plants are Natives of warm Countries, they require a Stove to preserve them here; they are propagated by Seeds, which should be sown in small Pots, and plunged in a hot Bed of Tanners Bark; when the Plants are fit to remove, they must be planted each into a small Pot filled with light Earth, and plunged into the hot Bed again, observing to shade them till they have taken new Root, then they must be treated in the same Manner as other Plants from the same Country.

The 2d Sort may be propagated by Cuttings, planted in any of the Summer Months; these should be plunged into a moderate hot Bed, and shaded from the Sun, till they have taken Root, then they may be treated as the seedling Plants. This Sort is not so tender as the other two, so may be placed in the open Air in Summer; and if they are kept in a moderate Degree of Warmth in Winter, they will thrive better than in great Heat. I have kept some of this Sort the three last Winters, in a dry warm Glass Case without Fires, and they have succeeded pretty well; but the last Winter proving severe, caused their Leaves to fall, but they put out again very well in the Spring.

DWARF TREES. These were formerly in much greater Request than at present; for though they have many Advantages, yet the Disadvantages attending them greatly over-balance; and since the introducing of Espaliers into the *English* Gardens, Dwarf Trees have been in little Esteem for the following Reasons:

1st, The Figure of a Dwarf Tree is very often so much studied, that, in order to render the Shape beautiful, little Care is taken to procure Fruit, which is the principal Design in planting these Trees.

2dly, The Branches being spread horizontally near the Surface of the Ground, render it very difficult to dig or clean the Ground between them.

3dly, Their taking up too much Room in a Garden (especially when they are grown to a considerable Size) for nothing can be sown or planted between them.

4thly, These Trees spreading their Branches near the Ground, continually shade the Surface of the Earth, so that neither the Sun nor Air can pass freely round their Roots and Stems, to dissipate noxious Vapours; whereby the circumambient Air will be continually replete with crude rancid Vapours, which, being drawn in by the Fruit and Leaves, will render its Juices crude and unwholesome, as well as ill tasted.

It is also very difficult to get to the Middle of these Dwarf Trees in the Summer, when their Leaves and Fruit are on the Branches, without beating off some of the Fruit, and breaking the young Shoots; whereas the Trees on an Espalier can at all Times be come at on

each Side, to tie up the new Shoots, or to displace all vigorous ones, which if left on, would rob the Trees of their Nourishment.

Add to this, the Fruit Buds of many Sorts of Pears and Apples are first produced at the End of the former Year's Shoot, which must be shortened in order to keep the Dwarfs to their proper Figure, so that the Fruit Buds are cut off, and a greater Number of Branches are obtained, than can be permitted to stand; so that all those Sorts of Fruit Trees, whose Branches require to be trained at their full Length, are very improper to train up as Dwarfs; and the Peaches and Nectarines which will bear Amputation, are too tender to be trained so in this Country.

These Evils being entirely remedied by training the Trees to an Espalier, hath justly gained them the Preference; however, if any one has a Mind to have Dwarf Trees, notwithstanding what has been said, I shall lay down a few Rules for their Management.

If you design to have Dwarf Pear Trees, you should bud or graft them on Quince Stocks; but as many Sorts of Pears will not thrive if they are immediately budded or grafted on Quince Stocks, so some of those Sorts which will take freely, should be first budded on the Quince Stocks; and when these have shot, the Sorts you intend to cultivate, should be budded into these; for Free Stocks are apt to make them shoot so vigorously, as not to be kept within Bounds. These Grafts or Buds should be put in about four or six Inches above the Surface of the Ground, that the Heads of the Trees may not be advanced too high, and when the Bud or Graft has shot out four Eyes, you should stop the Shoot, to force out lateral Branches.

Two Years after Budding, these Trees will be fit to transplant where they are to remain; for though many People choose to plant Trees of a greater Age, yet they seldom succeed so well as young ones. The Distance these Trees should be planted is twenty-five or thirty Feet asunder, for less will not do if the Trees thrive well. The Ground between them may be cultivated for Kitchen Garden Herbs while the Trees are young, but you should not sow or plant too near their Roots.

In order to train your Trees regularly, you should drive Stakes into the Ground round the Tree, to which the Branches should be nailed down with Lint in a horizontal Position; for if they are suffered to grow perpendicularly while young, they cannot be afterwards reduced, without great Violence, to any tolerable Figure. The necessary Directions to be afterwards followed are, not to suffer any Branches to cross each other; and always in shortening any Shoots be sure to leave the uppermost Eye outwards, whereby the Hollowness in the Middle of the Tree will be better preserved; and be careful to rub off all perpendicular Shoots in the Middle of the Trees, as soon as they are produced. The other necessary Rules you will find under the Article of *Pruning*.

The Sorts of Pears which do best in Dwarfs, are all Summer and Autumn Fruits; for Winter Pears are not worth planting in Dwarfs, they seldom bearing well, nor are ever well tasted, and commonly are very stony, because they are commonly grafted on Quince Stocks.

Apples are also planted in Dwarfs, most of which are now budded or grafted on Paradise Stocks; but as these

are for the most Part of a short Duration, they are not profitable, and are fit only for small Gardens, as a Matter of Curiosity; producing Fruit sooner, and in greater Plenty, than when they are upon Crab or Apple Stocks.

The Distance these Trees should be planted, if on Paradise Stocks, should be 6 or 8 Feet; but if on Crab Stocks, 25 or 30 Feet asunder each Way. The Management of this being the same with Pears, I need not repeat it.

Some Persons also plant Apricots and Plums for Dwarfs, but these seldom succeed well, as being of a tender Constitution; and those which will produce Fruit on Dwarfs, are much more likely to do so when trained on an Espalier, where they can be much better managed; and therefore I judge it much the better Method, as being more certain, and the Trees will make a better Appearance.

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EARTH is the principal Matter whereof our Globe consists; the Character of which, according to Dr. Boerhaave, is, That it is a *fossil Body, neither dissoluble by Fire, Water, nor Air; that it is insipid, and transparent; more fusible than Stone; still friable, and containing usually a Share of Fatness.*

There is no such Thing as a strictly simple Earth. Mr. Boyle says, That it doth not appear, that Nature, any more than Art, affords an elementary Earth; at least, some which appear of the simplest Sorts are found, upon Examination, to have Qualities not ascribed to pure Earth.

Of such Earths some are simple and immutable; as Chalk, Pumice, and Rotten Stone; others compound and fatty; of which Kind are all Boles, red, white, and brown; Fullers Earth, and divers Kinds of medicinal Earths; as the *Cretica, Hungarica, Lemnian Earth*, and others.

Which Earths are all resolvable into Oil, a little acid Salt, &c. and a Calx, which is the Basis, or the Earth properly so called.

Sand is by Naturalists generally ranked as a Species of Earth, though not very properly; in that, Sands, strictly speaking, are a Sort of Crystals, or little transparent Pebbles, and are calcinable; and, by the Addition of a fixed alkaline Salt, fusible, and convertible into Glass.

The fat Earth is rendered fertile by the Means of Sand, and becomes fit to feed and nourish Vegetables, &c. for pure Earth is liable to coalesce into a hard coherent Mass, as in Clay; and Earth thus embodied, and as it were glued together, would be very unfit for the Nourishment of Plants.

But if hard Sand, *i. e.* Crystals, which are indissoluble in Water, and still retain the same Figure, be intermixed with such Earth, they will keep the Pores of the Earth open, and the Earth itself loose and incompact; and by that Means give Room for the Juices to move, ascend, &c. and for Plants to be nourished thereby.

Thus a Vegetable, being planted either in the Sand alone, or in the fat Glebe and Earth alone, receives no Growth or Increment, but is either starved or suffocated; but mix the two, and the Mass becomes fertile.

In Effect, by Means of Sand the Earth is rendered, in some Mensure, organical; Pores and Interstices being thereby maintained or preserved, something analogous to Vessels is effected; by which the Juices of the Earth may

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be conveyed, prepared, digested, circulated, and at Length excerned and thrown off in the Roots of Plants.

The Earth is made up of two Parts; the first the containing Part, *i. e.* the Body, Bed, or Couch. The second Part contained, and those are the nitrous or sulphureous Particles, or prolifick Salts. The first is a lifeless inanimate Mass, and is only the Receptacle of the other; for the Earth, considered simply, and abstracted from the before-mentioned nitrous and prolifick Salts, is a lifeless, dead, and inanimate Mass; but by the Co-operation of Water, Sun, and Air, is put into Motion, and promotes the Work of Vegetation: But if it were stript of those prolifick Salts and spirituous Particles, would produce no Manner of Plant, Herb, &c. that should be planted or sown in it.

These nitrous Particles, or prolifick Salts, are of various and different Qualities; and according as the Earth is more or less stored with all or some of them, it is more or less productive; and according as it abounds with some of them more than others, differing from one another in Contexture, it constitutes the different Species or Kinds of Soils adapted to the Propagation of different Plants; the Pores of whose Roots are formed to receive, and whose Nature is to attract, those Salts that are congenial to them.

Some distinguish Earths into three Classes, Sand, Loam, and Clay, as those upon one or other of which all others do in some Respects depend.

Gravel, and all the open Soils, till the Loam is come at, are of the sandy Kind.

Those binding Earths from the Loam downwards, till the Stiffness of Chalk may be come at, may be reckoned of the Clay Kind.

All these Sorts of Earth have a little Tendency to Vegetation, and have their Salts proper for it, but in a different Proportion; as a Peck of Clay may probably have double the Quantity of Salts in it that a Peck of Loam has, and a Peck of Loam may have six Times the Quantity of Salts that a Peck of Sand has.

Loam: Some call the superficial Earth that we meet with in *England* by this Name, without having Regard to what Proportion of Sand and Clay it contains: Others again call that Earth Loam, that inclines more to Clay than Sand: Some by Loam mean that Sort of Earth that equally partakes of Sand and Clay, being a Medium between Sand and Clay, which they call Mother Earth; but the true Definition of Loam is, that Sort of Earth which

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which is fat and slippery, not of so close a Texture as Clay, nor too loose and sandy, but of a middle Nature between them, and is easily dissolved by Frost, and gentle or easy to be wrought: This is one of the best Soils for most esculent Plants and Roots.

This Mother Earth, they say, may be in Colour either black or yellow; and of which of these Colours soever it be, Plants of all Sorts will grow in it.

Sand and Clay likewise produce certain Plants, which are natural to each of them, and consequently will thrive better in them than in any other Soil.

But Sand is apt to precipitate those Plants that are set in it, earlier than Clay, and will cause them to germinate near a Month sooner than those that grow in Clay, and that for this Reason; because the Salts which are in the Sand, are liable to be put in Motion by the least Approach of the Warmth of the Sun; but as Sand is quick in the Operation, so the Salts are soon exhaled and spent.

Clay. The Pores of Clay are more closely compacted together, and do not so easily give out those Salts that are contained in it; nor can the Fibres of every tender Plant make their Way through it in Quest of their proper Nutriment.

But if the Parts of the Clay be opened, by digging and breaking it into small Particles, and those Parts be kept open by a Mixture of some sharp Sand, or some other Body of the like Quality, the Effects of its Vigour will plainly appear.

Some distinguish the several Temperaments of the Earth either into a light, sandy, or loose Contexture; or into those of a stiff, clayey, or close one, either of which have their respective good Qualities; and all of them, when they are in their Extremes, require Art to render them useful and beneficial in the Production and Growth of Plants.

A light, sandy, or loose Earth, requires a proper Ligature, and should have a Compost of a heavier Nature; and those that are heavy, clayey, and cloddy, should have a Compost of a more fiery, sprightly Nature, that will insinuate itself into the heavy, lumpy, indigested Clods, which would otherwise very much obstruct the Business of Vegetation.

A good Earth should be of a blackish Colour, fat, pliant, or easy to be dug; it should be neither cold nor light; it ought to have no ill Smell or Taste, and it should be of the same Quality three or four Feet deep for Trees; which, if they have not that Depth, will languish and decay, after they have been planted six Years. But this Depth is not required for Fruit Trees, which will thrive very well, if they have two Feet and a Half of good Earth; and generally produce the most generous Fruits, when their Roots spread near the Surface of the Earth.

In order to know whether the Earth has any ill Smell or Taste, they direct to lay a Handful of it to soak in Water for seven or eight Hours, and afterwards to strain it, and taste and smell it, by which the Taste or Smell will easily be perceived.

E A R W I G S.

These are very troublesome Vermin in a Garden, especially among Carnations; for they are so fond of these Flowers, that if Care is not taken to prevent them, they will entirely destroy them, by eating off the sweet Part

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at the Bottom of the Petals or Leaves. To prevent which, see *Carnation*, under the Article *Dianthus*.

Others hang the hollow Claws of Crabs and Lobsters upon Sticks in divers Parts of the Garden, into which these Vermin get; and by often searching them, you will destroy them without much Trouble; which will be of great Service to your Wall Fruit, for these are great Destroyers of all soft Fruits.

EBENUS. *Lin. Gen. Barba Jovis. Tourn. Ebony.*

The Characters are,

The Empalement of the Flower is of one Leaf, which is divided into 5 acute Segments at the Top; the Flower is of the Butterfly Kind, the Vexillum is obtuse and reflexed, the Wings are equal in Length with the Vexillum, they are broad and roundish; the Keel is shorter and turns upwards. It hath 10 Stamina, joined, standing together, and the other separate, terminated by single Summits. In the Bottom is situated an oblong Germen, supporting a rising Style crowned by a single Stigma; the Germen afterward becomes an oblong swelling Pod, opening with two Valves, and inclosing three or four Kidney-shaped Seeds. This is distinguished from Trifolium, by the Bractææ which are situated between the Flowers on the Spike.

We have but one Species of this Genus.

EBENUS. *Lin. Sp. Plant. 764. Ebony.* This is the *Barba Jovis lagopoides, Cretica, frutescens, incana, flore spicato purpureo amplo. Breyn. Prod. 2.* Shrubby Hares-foot *Jupiter's Beard of Crete*, with hoary Leaves, and a large purple Flower growing in Spikes.

This Plant grows naturally in *Crete*, and in some of the Islands of the *Archipelago*; it rises with a shrubby Stalk 3 or 4 Feet high, which puts out several Side Branches, garnished with hoary Leaves at each Joint, composed of 5 narrow Spear-shaped Lobes, which join at their Tails to the Foot Stalk, and spread out like the Fingers of a Hand: The Branches are terminated by thick Spikes of large purple Flowers, of the Butterfly or Pea-bloom Kind; the Spikes are from 2 to 3 Inches long, so make a fine Appearance, especially when the Plants are strong, and have many Spikes of Flowers on them. It flowers in *June* and *July*, and in warm Seasons will sometimes perfect Seeds in *England*.

This is propagated by Seeds, which should be sown in Autumn, for those sown in Spring often fail; they must be sown in Pots, and placed under a Frame in Winter, where they may be protected from Frost; in Spring the Plants will come up, which should be kept clean from Weeds, and refreshed now and then with Water. When these have acquired Strength enough to be removed, they should be each planted in a small Pot, filled with light Earth, and plunged into a moderate hot Bed, just to promote their taking new Root; then they should be gradually inured to bear the open Air, into which they should be removed the latter End of *May*, placing them in a sheltered Situation, where they may remain till Autumn, when they must be removed into Shelter, for these Plants will not live in the open Air through the Winter; nor should they be too tenderly treated, lest they draw up weak: I have found them succeed best when placed in an airy Glass Case without Fire in Winter, where they will have more Sun and Air, than in a Green-house: During the Winter Season, the Plants must be sparingly watered, but in Summer they require to be often refreshed.

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freshed. The other Management is the same as for other of the hardier exotick Plants, among which this will make a fine Variety.

EBULUS. See Sambucus.

ECHINATE SEEDS [of *Echinus*, Lat. a Hedgehog]; such Seeds of Plants as are prickly and rough.

ECHINOMELOCACTUS. See Cactus.

ECHINOPHORA. Lin. Gen. Plant. 292. Tourn. Prickly Parsnep.

The Characters are,

It hath an umbellated Flower; the general Umbel is composed of many smaller, the intermediate being the shortest; the Involucrum of the general Umbel ends in acute Thorns, those of the Rays are turbinate, of one Leaf, cut into six unequal Parts, with acute Points; the Perianthium is divided into 5 Parts, and sits on the Germen; the general Umbel is uniform; the Flowers have 5 unequal Petals, which spread open; they have each 5 Stamina, terminated by roundish Summits. Under the Perianthium is situated an oblong Germen with the Empalement, supporting 2 Styles, crowned by single Stigmas; the Germen turns to 2 Seeds, inclosed in the hard Empalement.

The Species are,

1. ECHINOPHORA foliolis subulato-spinosis integerrimis. Lin. Sp. Plant. 239. Prickly-headed Parsnep, with Awl-shaped prickly Leaves which are entire. This is the *Echinophora maritima spinosa*. Tourn. Inst. 656. Prickly maritime Parsnep.

2. ECHINOPHORA foliolis incisiss inermibus. Lin. Sp. Prickly-headed Parsnep, whose small Leaves are cut, but have no Thorns. *Echinophora pastinacæ folio*. Tourn. Prickly-headed Parsnep with a Carrot Leaf.

These Plants grow naturally on the Borders of the Mediterranean Sea; they are preserved in Botanic Gardens for Variety: They have both perennial Roots, which creep in the Ground; the 1st hath branching Stalks, growing 5 or 6 Inches high, which are garnished with short thick Leaves, that terminate in 2 or 3 sharp Thorns; they are placed by Pairs opposite: The Flowers grow in an Umbel, sitting upon a naked Foot Stalk, which arises from the Side of the Stalk; the Flowers are white, and under the Umbel is situated an Involucrum, composed of several Leaves, which terminate in sharp Spines. It flowers in June, but seldom ripens Seeds in this Country.

The 2d Sort rises near a Foot and a Half high; from the principal Stalk are sent out 2 Side Branches at every Joint, placed opposite; the lower Part is garnished with Leaves, finely divided like those of the Carrot; the Flowers grow in small Umbels at the Extremity of the Branches, having a short prickly Involucrum. This flowers in July, but doth not ripen Seeds in England.

These Plants are propagated by their creeping Roots in England, as they do not produce Seeds here; the best Time to transplant them is the Beginning of March, a little before they shoot: The Roots should be planted in a gravelly or sandy Soil, and in a warm Situation, or otherwise they should be covered in the Winter to prevent the Frost from destroying them.

ECHINOPS. Lin. Gen. Plant. 829. *Echinopus*. Tourn. Inst. R. H. 463. Tab. 262. Globe Thistle.

The Characters are,

It hath a permanent Perianthium, which is oblong, an-

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gular, and imbricated; the Flower hath one Funnel-shaped Petal, which is divided at the Top into 5 Parts, which spread open and are reflexed. It hath 5 short hairy Stamina, terminated by cylindrical Summits. In the Bottom of the Tube is situated an oblong Germen, supporting a slender Style, the Length of the Tube, crowned by 2 oblong depressed Stigmas which turn back; the Germen becomes an oblong oval Seed narrowed at the Base, but obtuse and hairy at Top.

The Species are,

1. ECHINOPS calyculis unifloris, caule multifloro, foliis spinosis supra nudis. Lin. Sp. Pl. 814. Globe Thistle with one Flower in each Empalement, many Flowers upon a Stalk, and prickly Leaves naked on the upper Side. This is the *Echinopus major*. Greater Globe Thistle.

2. ECHINOPS calycibus unifloris, caule unicapitato. Lin. Sp. Plant. 815. Globe Thistle with one Flower in each Empalement, and one Head upon a Stalk. This is the *Echinopus minor*. J. B. 3. 72. Smaller Globe Thistle.

3. ECHINOPS minor annuus, magno capite. Tourn. Inst. 463. Smaller annual Globe Thistle with a large Head.

4. ECHINOPS Græcus, tenuissima divisis & lanuginosus, capite minori cæruleo. Tourn. Cor. 34. Greek Globe Thistle whose Leaves are divided into narrow Segments and are woolly, with a smaller blue Head.

The first is the common Globe Thistle, which has been long cultivated in Gardens; this grows naturally in Italy and Spain; it hath a perennial Root, from which arise many Stalks that grow to the Height of 4 or 5 Feet; these are garnished with long jagged Leaves, divided into many Segments almost to the Mid-rib, the Jags ending in Spines; they are of a dark green on their upper Side, but woolly on their under; the Flowers collected in globular Heads, several of these grow upon each Stalk; the common hath blue Flowers, but there is a Variety of it with white. It flowers in July, and the Seeds ripen in August.

This Plant is easily propagated by Seeds, which, if permitted to scatter, the Plants will rise in Plenty, so a few of them may be transplanted to the Places where they are designed to remain to flower; they require no other Culture, but to keep them clean from Weeds: The 2d Year they will flower and produce Seeds, and the Roots will continue 2 or 3 Years after; but if the Seeds scatter, the Plants will become troublesome Weeds; to prevent which, the Heads should be cut off as soon as the Seeds are ripe.

The 2d Sort grows in the South of France and in Italy; this hath a perennial Root, which sends up several strong Stalks, that rise 2 Feet high, and are garnished with Leaves cut into many fine Segments to the Mid-rib; these are set with Prickles, and are white on their under Side: The Stalks branch out toward the Top; each of these Branches is terminated by a globular Head of Flowers, which are smaller than those of the 1st, and of a deeper blue; there is also a Variety of this with white Flowers. It flowers about the same Time as the first, and is propagated the same Way. These will both grow in almost any Soil or Situation.

The 3d Sort grows naturally in Spain and Portugal: This is an annual Plant, which rises with a stiff white Stalk 2 Feet high; this is garnished with divided Leaves, ending in many Points which have Spines; their upper Side

Side is green, and covered with brown Hairs, their under Side white and woolly; the Stalk is terminated by one large Head of pale blue Flowers. These appear in July, and if the Season proves warm and dry, the Seeds will ripen in Autumn, but in wet cold Years they rarely ripen here.

These Seeds should be sown in Spring, on a Border of light Earth, where the Plants are to remain; they require no Care but to thin them where they are too close.

The 4th Sort grows naturally in Greece, from whence Dr. Tournefort sent the Seeds to the Royal Garden at Paris: This hath a perennial creeping Root, by which it multiplies fast; the Stalks rise about a Foot high, closely garnished with Leaves which are shorter and much finer divided than either of the former Sorts; these are hoary, and armed on every Side with sharp Thorns; the Stalks are terminated by one large globular Head of Flowers, which in some are blue, and others white. They appear the latter End of June, and in warm Seasons the Seeds ripen well in England. This is easily propagated by its creeping Roots, or from Seeds; it loves a dry Soil, and a warm Situation.

ECHINUS, Lat. is the prickly Head or Cover of the Seed or Top of any Plant, so called from its Likeness to a Hedgehog.

ECHIUM. Lin. Gen. Plant. 157. Tourn. Inst. R. H. Viper's Bugloss, in French, Viperine.

The Characters are,

The Flower hath a permanent Empalement, divided into 5 Parts. It hath one Petal, with a short Tube with an erect broad Brim, cut into 5 Parts, and is obtuse; the 2 upper being longer than the lower, which are acute and reflexed. It hath 5 Awl-shaped Stamina, terminated by oblong prostrate Summits. In the Bottom are situated 4 Germina with one slender Style, crowned by an obtuse bifid Stigma; the Germina afterward become so many roundish pointed Seeds, inclosed in the rough Empalement.

The Species are,

1. ECHIUM caule simplici erecto, foliis caulinis lanceolatis bispidis, floribus spicatis lateralibus, staminibus corolla aequantibus. Viper's Bugloss with a single erect Stalk, having rough Spear-shaped Leaves, and Flowers in Spikes proceeding from the Side, with the Stamen equaling the Petal. This is the *Echium vulgare*. C. B. Common Viper's Bugloss.

2. ECHIUM caule simplici erecto, foliis caulinis lanceolato-linearibus hispidis, floribus lateralibus spicatis sessilibus, staminibus corollâ longioribus. Viper's Bugloss with a single erect Stalk, having rough narrow Spear-shaped Leaves, Flowers sitting close, and growing in short Spikes on the Side, and a Stamen longer than the Petal. This is the *Lycopsis Anglica*, Lob. English *Lycopsis*.

3. ECHIUM corollis vix calycem excedentibus, margine villosis. Hort. Ups. Viper's Bugloss, whose Petals scarce exceed the Empalement, and having hairy Borders. This is the *Echium majus* & *asperius*, flore albo. C. B. P. 25. Great rough Viper's Bugloss, with a white Flower.

4. ECHIUM foliis radicalibus lanceolatis amplissimis, caulinis linearibus birsutis, corollis stamine longioribus. Viper's Bugloss with large Spear-shaped Leaves at the Root, these on the Stalks narrow and hairy, and the Petal of the Flower longer than the Stamina. This is

the *Echium amplissimo folio*, Lusitanicum. Tourn. Portugal Viper's Bugloss, with a large Leaf.

5. ECHIUM calycibus frutescentibus distantibus, caule procumbente. Hort. Ups. Viper's Bugloss with fruitful Empalements growing at a Distance, and a trailing Stalk. *Echium Creticum latifolium rubrum*. C. B. Broad-leaved Viper's Bugloss of Candia, having a red Flower.

6. ECHIUM caule ramoso, aspero, foliis calloso-verrucosis, staminibus corollâ longioribus. Viper's Bugloss with a rough branching Stalk, warted Leaves, and Stamina longer than the Petal. This is the *Echium Creticum angustifolium rubrum*. C. B. Narrow-leaved Viper's Bugloss of Candia, having a red Flower.

7. ECHIUM caule fruticoso. Hort. Cliff. 43. Viper's Bugloss with a shrubby Stalk. This is the *Echium Africanum fruticosum, foliis pilosis*. Hort. Amst. 2. p. 107. Shrubby African Viper's Bugloss, having hairy Leaves.

The 1st Sort grows naturally in Germany and Austria, from whence I received the Seeds. This and our common Viper's Bugloss, which is the 2d, have been confounded by most of the Writers on Botany, who have supposed they were the same Plant, whereas they are very different; for the Leaves of this are shorter, and much broader than those of the 2d; the Spikes of Flowers are much longer, and the Stamina of the Flowers are in this equal in Length with the Petal; whereas those of the 2d stand out much beyond the Petal, which is an essential Difference.

The 2d Sort grows naturally on chalky Lands, in most Parts of England: This is what Lobel titles *Lycopsis Anglica*, and has been generally taken for the common *Echium*.

The 3d Sort grows naturally in the South of France, and in Italy; this rises with an upright Stalk, which is very hairy, as are also the Leaves; the Flowers are produced in short Spikes on the Side of the Branches; they are small, and scarce appear above the Empalements; some Plants have white Flowers, and others are purplish; the Empalements of the Flowers are very hairy, and cut into acute Segments.

The 4th Sort grows naturally in Portugal and Spain; the lower Leaves of this are more than a Foot long, and 2 Inches broad in the Middle gradually lessening to both Ends; these are covered with soft Hairs. The Stalks grow 2 Feet high; the Flowers are in short Spikes coming from the Side of the Stalks; the Petals of these are longer than the Stamina.

The 5th Sort grows naturally in Crete; this hath trailing hairy Stalks, which grow about a Foot long, and put out several Side Branches, garnished with hairy Spear-shaped Leaves about 3 Inches long, and 3 Quarters of an Inch broad, sitting close to the Stalks. The Flowers come out on slender Spikes upon long Foot Stalks, which come from the Wings of the Leaves; they are large, of a reddish purple Colour, which turns to a fine blue when they are dried; these stand at a Distance from each other on the Spike. It is an annual Plant, which flowers in July and decays in Autumn.

The 6th Sort hath branching Stalks, which grow a Foot and Half long, declining toward the Ground; they are covered with stinging Hairs, and are warted; the Leaves are 4 Inches long, and not more than half an

an Inch broad; these are pretty much warted, and are hairy. The Flowers grow in loose Spikes from the Side of the Stalks, and also at the End of the Branches; they are of a reddish purple Colour, but not so large as those of the former Sort, and the Stamina of these are longer than the Petals. This is also an annual Plant, which grows naturally in *Crete*.

These are all of them biennial Plants, except the 5th and 6th Sorts, which are annual, and are the most beautiful of all the Kinds: The Seeds of these must be sown every Year, in the Places where they are designed to remain; and the Plants require no other Culture, but to keep them clean from Weeds, and thin them where they grow too close. In *July* they flower, and their Seeds ripen in 5 or 6 Weeks after. The Seeds of the other Sorts being sown in Spring, will the second Summer after produce Flowers and Seeds, after which they seldom continue. They all delight in a rubbishy gravelly Soil, and will grow on the Tops of old Walls or Buildings; where, when once they have established themselves, will drop their Seeds and thereby maintain a Succession of Plants without any Care; on these Places they appear very beautiful.

The 7th Sort grows naturally at the *Cape of Good Hope*, from whence the Seeds were brought to *Holland*. This rises with a shrubby Stalk 2 or 3 Feet high, dividing upward into several Branches, garnished with oval Leaves placed alternate, whose Base sits close to the Stalk; they are hairy, and of a light green. The Flowers are produced singly between the Leaves at the End of the Branches; they are of a purple Colour, and in Shape much like those of the 5th Sort. These appear in *May* and *June*, and the Seeds ripen about 6 Weeks after.

It is propagated by Seeds, which should be sown in Pots filled with light sandy Earth soon after they are ripe. These may be exposed to the open Air till the Beginning of *October*, when the Pots should be placed under a Frame, to guard them from Frost; but in mild Weather, they should have the free Air, to prevent the Seeds from vegetating till the Winter is past; for if the Plants come up at that Season, their Stems will be weak and full of Juice, and very liable to rot with Damps; therefore it is much better if the Plants do not come up till toward *March*, which is the usual Time of their appearing, when the Seeds are not forced by Warmth. When they are fit to remove, they should be each planted into a small Pot filled with light Earth, and placed under a Frame to forward their putting out new Roots; then they should be gradually inured to bear the open Air, and the latter End of *May* placed abroad in a sheltered Situation to remain till the Beginning of *October*, at which Time they must be removed into an airy Glass Case, where they may enjoy the Sun and have free Air in mild Weather. During the Winter Season, these Plants must be sparingly watered; for as their Stems are succulent, much Moisture will cause them to rot. In Summer they should be set abroad in a sheltered Situation, and treated in the same Manner as other Plants from the same Country.

EDERA QUINQUEFOLIA. See *Vitis*.

EDGINGS. The best and most durable Plant for Edgings in a Garden, is Box; which if well planted, and

rightly managed, will continue in Beauty several Years: The best Season for planting this, is either in the Autumn, or very early in the Spring; for if you plant it late, and the Season should prove hot and dry, it will be very subject to miscarry, unless great Care be taken to supply it with Water. The best Sort for this Purpose is the Dwarf *Dutch Box*.

These Edgings are only planted upon the Sides of Borders next Walks, and not (as the Fashion was some Years ago) to plant the Edgings of Flower Beds, or the Edges of Fruit Borders, in the Middle of Gardens, unless they have a Gravel Walk between them; which renders it proper to preserve the Walks clean, by keeping the Earth of the Borders from washing down into the Walks in hard Rains.

It was also the Practice formerly, to plant Edgings of divers Sorts of aromatick Herbs, as Thyme, Savory, Hyssop, Lavender, Rue, &c. But these very soon grow woody, so cannot be kept in due Compass, and in hard Winters they are often killed in Patches, whereby the Edgings are rendered incomplete, they are now seldom used for this Purpose.

Some People make Edgings of Daisies, Thrift, Catchfly, and other flowering Plants; but these also require to be transplanted every Year, to have them handsome; for they soon grow out of Form, and are subject also to decay in Patches; there is not any Plant which so completely answers the Design as the Dwarf Box, which is preferred to all others for this Purpose.

EHRETIA. *Trew. Tab. 25. Cerasso affinis. Sloan. Cat. 169. Bastard Cherry Tree.*

The Characters are,

The Flower has a small permanent Empalement of one Leaf; it has a Bell-shaped Petal, cut into six Segments to the Middle which are reflexed, and 6 Stamina which are longer than the Petal, and spread open every Way, terminated by roundish Summits; it has a roundish Germen supporting a slender Style, crowned by an obtuse Stigma. The Germen afterward becomes a succulent Berry with 2 Cells, including 2 Stones, each having 2 Kernels, which are convex on one Side, and plain on the other.

We know but one Species of this Genus, viz.

EHRETIA. This is the *Ebretia foliis alternis oblongis acuminatis, spicae florum sparsae petalis reflexis albis. Trew. Tab. 25.* *Ebretia* with alternate, oblong, acute-pointed Leaves, and sparfed Spikes of Flowers, having white reflexed Petals; it is called Bastard Cherry Tree in the *West-Indies*.

This has a strong woody Trunk, which grows to the Size of a middling Pear Tree, covered with a gray furrowed Bark, and divides into many Branches, which are garnished with oblong, acute-pointed, smooth Leaves, 5 or 6 Inches long, and 2 and a Half broad, of a dark green Colour on their upper Side; they are placed alternate, having short Foot Stalks. The Flowers are produced into Panicles at the End of the Branches; they are small, white, and of one Petal, having a Bell-shaped Tube, but is cut into 6 Segments to the Middle which are reflexed; these are succeeded by small, oval, succulent Berries containing one or two Stones; it grows in most Parts of the Islands of the *West-Indies*.

This is propagated by Seeds sown in Pots, and plunged in a hot Bed of Tan; when the Plants come up they may

may be treated as the *Malpighia*, to which the Reader is referred, to avoid Repetition. This Plant has produced Flowers several Times in the *Cbelsea* Garden, but it has not perfected Fruit here.

The Title of this Genus was given by the learned Dr. Trew of Nuremberg, in Honour of Mr. George Denis Euret a curious Botanist, who sent a Drawing of the Plant to the Doctor, taken from one of the Plants that flowered in the *Cbelsea* Garden, from which he has published a curious Print in his 25th Table.

ELÆAGNUS. *Lin. Gen. Plant.* 148. *Tourn. Cor.* 53. Tab. 489. Oleaster, or wild Olive.

The Characters are,

The Flower hath a Bell-shaped Empalement of one Leaf, which is quadrisid, rough on the Outside, but coloured within. It hath no Petals, but 4 short Stamina which are inserted in the Divisions of the Empalement, and are terminated by oblong prostrate Summits. At the Bottom is situated a roundish Germen supporting a single Style, crowned by a single Stigma; the Germen becomes an obtuse oval Fruit, with a Puncture at the Top, inclosing one obtuse Nut.

The Species are,

1. ELÆAGNUS *aculeatus, foliis lanceolatis*. Prickly wild Olive with Spear-shaped Leaves. This is the *Elæagnus Orientalis latifolius, fructu maximo*. *Tourn. Cor.* Eastern broad-leaved wild Olive, with a large Fruit.

2. ELÆAGNUS *inermis, foliis lineari-lanceolatis*. Wild Olive without Thorns, and narrow Spear-shaped Leaves. This is the *Elæagnus Orientalis angustifolius, fructu parvo olivæformi subdulci*. *Tourn.* Eastern wild Olive, with narrow Leaves, and a small sweet Olive-shaped Fruit.

3. ELÆAGNUS *foliis ovatis*. *Prod. Leyd.* 250. Wild Olive with oval Leaves. This is the *Elæagnus foliis rotundis maculatis*. *Burm. Pl. Zeyl.* 92. Wild Olive with round spotted Leaves.

The 1st and 2d Sorts Dr. Tournefort found growing naturally in the *Levant*, and the first I take to be the common Sort, which grows naturally in *Bobemia*, of which I saw some Trees growing in the curious Garden of the late Dr. Boerhaave near *Leyden*. The Leaves of this Sort are not more than 2 Inches long, and about 3 Quarters of an Inch broad in the Middle; they are white, and have a soft cottony Down on their Surface; at the Foot Stalk of every Leaf, there comes out a pretty long sharp Thorn; as the Leaves are placed alternate on the Branches, the Spines come out on each Side just below the Foot Stalks of the Leaves, and are alternately longer: The Flowers are small, the Inside of the Empalement is yellow, and they have a strong Scent when fully open.

The 2d Sort hath no Thorns, the Leaves are more than 3 Inches long, and not half an Inch broad; they are very soft, and have a shining Appearance like Satin. The Flowers come out at the Foot Stalks of the Leaves, sometimes singly, at other Times 2, and frequently 3 at the same Place; the Outside of the Empalement is silvery and fluted, the Inside of a pale yellow, having a very strong Scent. This flowers in July, and sometimes the Flowers are succeeded by Fruit. This is the Sort most common in the *English* Gardens.

These Plants may be propagated by laying down the young Shoots in Autumn, which will take Root in one Year, when they may be cut off from the old Trees,

and either transplanted into a Nursery for 2 or 3 Years, to be trained up, or into the Places where they are to remain. The best Season for transplanting these Trees is the latter End of *February*, or Beginning of *March*; though they may be removed at *Michaelmas*, provided the Roots are mulched, to protect them from severe Frost in Winter. These Plants should be placed where they may be screened from strong Winds, for they grow very freely, and are very subject to be split down by the Wind, if too much exposed.

These Trees commonly grow to 12 or 14 Feet high, and when intermixed with other Trees of the same Growth, make a pretty Diversity; their Leaves being of a Silver Colour, are easily distinguished at a Distance.

The 3d Sort grows naturally at *Ceylon*, and in some other Parts of *India*. This is pretty rare at present in the *English* Gardens, but some Years past there were several pretty large Plants of it in the Garden at *Hampton Court*. This rises with a woody Stem to the Height of 8 or 9 Feet, dividing into many Branches, garnished with oval silvery Leaves, which have several irregular Spots of a dark Colour on their Surface; they are placed alternately on the Branches, and continue all the Year. The Flowers I have not seen, though some of the Trees at *Hampton Court* produced Flowers, but I was not so lucky as to see them.

This Sort requires a warm Stove in this Country, for it is too tender to live in the open Air, except for a short Time in the warmest Part of Summer.

The two 1st Sorts are extremely hardy, so are not injured by the Frost, but the Trees are not of very long Duration, therefore young Plants should be raised once in 3 or 4 Years, to preserve the Kinds.

ELATERIUM. See *Momordica*.

ELATINE. See *Linaria*.

ELECAMPANE. See *Inula*.

ELEPHANTOPUS. *Lin. Gen. Pl.* 827. *Vaill. Aët.* Par. 1719. *Dill. Hort. Elt.* Elephant's Foot.

The Characters are,

There are many Flowers collected together in one common large Involucrum which is permanent, and each Empalement contains 4 or 5 Florets; the Florets are tubulous and hermaphrodite; they have one Petal, which is Tongue-shaped; the Brim is narrow, and divided into 5 equal Parts; they have 5 very short hairy Stamina, terminated by cylindrical Summits. In the Bottom is situated an oval Germen, supporting a slender Style, crowned by 2 slender Stigmas; the Germen becomes a single compressed Seed crowned with Bristles, and sitting on a Placenta inclosed in the Empalement.

The Species are,

1. ELEPHANTOPUS *foliis oblongis scabris*. *Hort. Cliff.* 390. *Elephantopus* with oblong rough Leaves. This is the *Elephantopus conyzæ folio*. *Vaill. Mem. Acad. Scien.* 1719. Elephant's Foot with a Flea-bane Leaf.

2. ELEPHANTOPUS *foliis ovatis tomentosis*. *Gron. Virg.* *Elephantopus* with oval woolly Leaves *Elephantopus belenii folio, purpurascens flore*. *Houft. Mss.* *Elephantopus* with an Elecampane Leaf, and a purplish Flower.

The 1st Sort grows naturally in both the *Indies*, I have received it from several Parts of *America*; this sends out many oblong rough Leaves, which spread near the Ground, between these, in the Spring, arises a

branching Stalk, little more than a Foot high. The Side Branches are short, and generally terminated by 2 Heads of Flowers, each standing upon a short Foot Stalk. The Heads contain a great Number of hermaphrodite Florets, included in a common Involucrum, composed of 4 oval Leaves, ending in acute Points. The Florets are of a pale purple Colour. They appear in July, but are rarely succeeded by Seeds in England.

The 2d Sort grows naturally in *South Carolina*; the Plants of this have frequently come up as Weeds in the Earth, which has been sent over from thence with other Plants; this hath several oval woolly Leaves, 4 Inches long, and 3 Inches broad, growing from the Root; these have many transverse Nerves, running from the Mid-rib to the Sides; they spread flat on the Ground, and between these arise a stiff Stalk, about a Foot high, which divides into many Branches, each being terminated by 2 Flowers, composed of several Florets, inclosed in a four-leaved Involucrum; 2 of these Leaves are alternately larger than the other. The Involucrum is longer than the Florets, so they do but just appear within the 2 larger Leaves; the Flowers make no Appearance. They appear in July, but the Seeds never ripen here.

The 1st Sort hath a perennial Root, but an annual Stalk. If this is planted in Pots, and sheltered in the Winter from Frost, it may be preserved several Years, and the Plants will annually flower; but the 2d Sort seldom continues longer than two Years.

These Plants are propagated by Seeds, which should be sown on a hot Bed in Spring; and when the Plants come up, they must be transplanted into Pots filled with fresh light Earth, and plunged into a hot Bed of Tanners Bark, observing to water and shade them until they have taken Root; then you should let them have a large Share of fresh Air in warm Weather, and frequently refresh them with Water.

ELEPHAS. See *Rhinanthus*.

ELICHRYSUM. See *Gnaphalium*.

ELLISIA. *Brown. Hist. Jam. 262.*

The Characters are,

The Flower has a small cylindrical Empalement of one Leaf, indented in 5 Parts at the Brim; it has one tubulous Petal which is curved, the Brim is cut into 5 almost equal Segments which spread open; it has 4 Stamina, 2 of which are longer than the other, terminated by roundish Summits, and a roundish Germen, supporting a single Style crowned by a thick Stigma. The Germen becomes a roundish Berry crowned by the Empalement, inclosing 8 Nuts, which have 2 Cells, with one angular Seed in each.

The Characters of the Flowers are copied from Dr. *Brown's History of Jamaica*, having never seen them myself; I have had many of the Plants in the Chelsea Garden near 20 Years, yet none of them have yet produced Flowers; but I have some Specimens of the Fruit from which they were raised, in my Collection.

We have but one Species of this Genus, viz.

ELLISIA. We have no English Name for this Plant; it was titled by Dr. *Brown* in Honour of Mr. *Ellis*, who has published some Observations on marine Productions of a Plant-like Nature.

This grows naturally in *Jamaica*, and other Islands in the *West-Indies*; it has a shrubby Stalk, which di-

vides into many slender angular Branches which are ligneous; these are garnished with oval Leaves which stand opposite; they are two Inches long, and an Inch and a Half broad; some of them are obtuse, and others end in acute Points; they are sawed on their Edges toward the Top, and are of a light green Colour, when they are in the Stove; but in Summer, when they are exposed to the open Air, they change black, and continue so till after they have been some Time in the Stove again. The Flowers (according to Dr. *Brown's* Figure) are disposed in loose Spikes, which come out from the Wings, and also at the End of the Branches; they are of the Lip, or, according to *Tournefort*, of the personated Kind, and are white. The Branches are armed at each Joint with 2 slender erect Thorns, which are situated opposite, immediately above the Leaves, and are unequal, being one longer than the other.

This Plant is propagated by Cuttings, which put out Roots with great Facility; these may be cut off from the Plants during any of the Summer Months, and if they are planted in Pots filled with light Earth, plunged into a moderate hot Bed of Tan, and shaded from the Sun, they will soon take Root; when they begin to shoot, they should have free Air admitted to them, and gradually hardened; then they should be carefully separated, and each planted in a small Pot filled with light Earth, placing them under Cover till they have taken new Root; then they may be removed into a warm sheltered Situation, where they may remain till Autumn; when they must be removed into the Stove, and during the Winter Season should have a temperate Heat, in which they thrive best; for when too tenderly treated, their Shoots are weak, and subject to be attacked by Vermin, nor will they live through the Winter in a Green-house. In Summer they should be placed in the open Air in a warm sheltered Situation; with this Management the Plants have succeeded best.

ELM. See *Ulmus*.

EMERUS. *Tourn. Inst. R. H. 650. Coronilla. Lin. Gen. Plant. 789. Scorpion Sena, vulgò.*

The Characters are,

The Flower hath a very short Empalement of one Leaf, divided into 5 Parts, which is permanent. The Flower is of the Butterfly Kind. The Tails of the Petals are much longer than the Empalement. The Standard is narrow, and shorter than the Wings, over which it is arched. The Wings are large and concave. The Keel is Heart-shaped and reflexed. There are 10 Stamina in each, one of which stands separate, the other 9 are joined; these are situated in the Standard. In the Empalement is situated an oblong slender Germen, supporting a slender Style, crowned by a taper Stigma. The Germen becomes a taper cylindrical Pod, swelling in those Parts where the Seeds are lodged, which are also cylindrical.

The Species are,

1. EMERUS caule fruticoso, pedunculis longioribus. Scorpion Sena with a shrubby Stalk, and longer Foot Stalks to the Flowers.

2. EMERUS foliis obcordatis, pedunculis brevioribus, caule fruticoso. Scorpion Sena with long Heart-shaped Leaves, shorter Foot Stalks to the Flowers, and a shrubby

shrubby Stalk. This is the *Emerus minor*. Tourn. Inst. R. H. 650. Lesser Scorpion Sena.

3. *EMERUS caule erecto, herbaceo, foliis multijugatis, floribus singularibus alaribus, siliquis longissimis erectis.* Scorpion Sena with an erect herbaceous Stalk, the Leaves composed of many Pair of Lobes, single Flowers proceeding from the Sides of the Stalks, and very long erect Pods.

The 1st of these Shrubs is very common in all the Nurseries near London; this rises with weak shrubby Stalks to the Height of 8 or 9 Feet, dividing into many slender Branches, garnished with winged Leaves, composed of 3 Pair of Lobes (or small Leaves) terminated by an odd one. The Flowers come out upon long Foot Stalks from the Side of the Branches, 2 or 3 of these Foot Stalks arising from the same Point; each of these sustains 2, 3, or 4 yellow Butterfly Flowers; these appear in May, and are frequently succeeded by long slender Pods, which are taper, swelling in those Parts where the Seeds are lodged, and hang downward; these Shrubs continue long in flower, especially in cool Seasons, and frequently flower again in Autumn, which renders them valuable.

The 2d Sort rises with many shrubby Stalks like the 1st, but not more than half the Height; this hath larger Leaves, which are of an oblong Heart-shape. The Flowers are rather larger than those of the first, and stand upon shorter Foot Stalks; these Differences hold in the Plants raised from Seeds; therefore I think they may be allowed to stand as distinct Species, though there is a great Likeness at first Sight in them.

The Leaves of these Shrubs, when fermented in a Vat, in the same Manner as is practised with the Indigo Plants, will afford a Dye, very near to that of Indigo, but whether it will answer the same Purposes, is not yet certain, or whether it may be worth cultivating for that Purpose, either here or Abroad, is what we cannot yet determine; but there is so great Affinity between these Plants, and those of the Indigo in their generical Characters; that Dr. Tournefort, and several other Botanists, have ranged them in the same Genus.

These Shrubs are easily propagated by sowing their Seeds (which they commonly produce in great Plenty) in March, upon a Bed of light sandy Earth, observing to keep the Bed clear from Weeds; and in very dry Weather you must often refresh the Bed with Water, which should be given carefully, lest the Seeds should be washed out of the Ground by hasty Watering. When the Plants are come up, they must be kept clean from Weeds, and in very dry Weather, if they are watered, it will promote their Growth, and the Michaelmas following (if your Plants have thriven well) you may draw out the largest, which may be transplanted into a Nursery, at 3 Feet Distance Row from Row, and one Foot asunder in the Rows. This will give Room to those Plants which are left to grow in the Seed Bed, in which Place they may remain another Year, when they will also be fit to transplant into a Nursery, where they should be 2 Years, when they will be fit to plant out, where they are to remain for good; in doing of which, you should be careful in taking them up, not to break or wound the Roots, nor should they remain too long in the Nursery before they are transplanted, for they are subject to

shoot downright Roots, which, when cut off, oftentimes proves the Death of the Tree. In all other Respects it must be treated like other flowering Shrubs, among which, this is commonly sold at the Nurseries. It may also be propagated by laying down the tender Branches, which will take Root in about a Year's Time, and may then be transplanted into a Nursery, and managed as the seedling Plants.

The 3d Sort grows naturally in the West-Indies, where Plumier first discovered it in the French Settlements, but it was found growing in Plenty, at La Vera Cruz, by the late Dr. Houssoun, who sent me the Seeds, which succeeded in the Chelsea Garden, where the Plants flowered, but did not perfect their Seeds, and the Plants being annual, the Species was lost here. This rises with a round herbaceous Stalk, 3 Feet high, garnished at each Joint, with one long winged Leaf, composed of about 20 Pair of Lobes, terminated by an odd one; these have obtuse Points, and are of a deep green. The Flowers come out singly from the Side of the Stalk, immediately above the Foot Stalk of the Leaves, standing upon slender Foot Stalks 2 Inches long; they are larger than those of either of the former Sorts, and are of a pale yellow Colour; these are succeeded by slender compressed Pods, which are more than 6 Inches long, having a Border on each Side, and a Swelling where each Seed is lodged.

This is an annual Plant, whose Seeds must be sown on a hot Bed in the Spring, and when the Plants are fit to remove, they should be each planted in a small Pot filled with light Kitchen Garden Earth, and plunged into a moderate hot Bed of Tanners Bark, shading them from the Sun, until they have taken new Root, then they must be treated in the same Manner as other exotics from those warm Countries. If these Plants are brought forward in Spring, and kept under a deep Frame in a Tan Bed, or plunged into the Bark Bed in the Stove, when they are grown too tall to remain under common Frames; they will ripen Seeds in England, for those Seeds which I received did not arrive here till May, and yet those Plants flowered well in August, but the Autumn coming on soon after, prevented their perfecting Seeds, and that Part of the Seed which I reserved till the next Year, did not grow.

EMPETRUM. Lin. Gen. Plant. 977. Tourn. Inst. R. H. 579. Tab. 421. Black-berried Heath.

The Characters are,

It hath male and female Flowers on different Plants; the male Flowers have a 3 pointed Empalement, which is permanent; they have 3 oblong Petals, which are narrow at their Base, and 3 long hanging Stamina, which are hairy, terminated by short two-pointed Summits, which stand erect. The female Flowers have the same Empalement and Petals as the male, but no Stamina. In the Center is situated a depressed Germen, supporting 9 reflexed spreading Stigmas. The Germen becomes a depressed round Berry of one Cell, inclosing 9 Seeds placed circularly.

We have but one Species of this Genus, viz.

EMPETRUM procumbens. Hort. Cliff. 470. Trailing Berry-bearing Heath. This is the *Empetrum montanum, fructu nigro. Tourn.* Black-berried Heath, Crow Berries, or Crake Berries.

This little Shrub grows wild upon the Mountains of Stafford.

Staffordshire, Derbyshire, and Yorkshire, and is seldom propagated in Gardens, unless for Variety; but it may be cultivated in shady Places, and will thrive very well in Gardens, where the Soil is stiff. The Plants should be procured from the Places where they grow naturally, for the Seeds remain a Year in the Ground before they vegetate, and afterward are very slow in their Growth, so they are not worth the Trouble of cultivating from Seeds. If the Plants are planted on a moist boggy Soil in Autumn, they will get Roots in the Winter, and will require no farther Care than to clear them from Weeds; these Shrubs commonly grow upon the Tops of wild Mountains, where the Soil is generally peaty, and full of Bogs; the Heath Cocks feed much upon the Berries of this Plant; so that wherever there is Plenty of these low Shrubs, there are commonly many of these Fowls to be found.

EMUSCATION, the Clearing a Tree of Moss, *Lat.*
 ENUCLEATION, a Taking out the Nut or Kernel of any Fruit, *Lat.*

ENULA CAMPANA. See Inula.

EPHEDRA. *Lin. Gen. Plant.* 1007. *Tourn. Inst.* 663. *Tab.* 477. Shrubby Horse Tail, *vulgo*.

The Characters are,

It hath male and female Flowers in different Plants; the male Flowers are collected in Katkins, which are scaly, under each Scale is a single Flower; these have no Petals, but 7 Stamina, which are joined in Form of a Column, and are terminated by roundish Summits. The female Flowers have an oval Perianthium, composed of five Series of Leaves, which alternately lie over the Divisions of the lower Range; these have no Petals, but have 2 oval Germina, sitting upon the Perianthium, supporting short Styles, crowned by single Stigmas. The Germina afterward turn to oval Berries, each having two Seeds.

We have but one Species of this Genus, *viz.*

EPHEDRA *pedunculis oppositis, amentis geminis.* *Hort. Cliff.* 465. Shrubby Horse Tail with opposite Foot Stalks, and twin Katkins. This is the *Ephedra maritima minor.* *Tourn.* Lesser Sea Horse Tail.

This is a low shrubby Plant, which grows naturally upon the Rocks by the Sea, in the South of France, in Spain, and Italy; it is also preserved in several Gardens for Variety, but has little Beauty. This hath a low shrubby Stalk, which puts out a few short Branches, rising about 2 Feet high, which have many protuberant Joints, at which come out several narrow rushy Leaves, like those of the Horse Tail, which continue green all the Year; the Plants rarely flower in this Country.

It may be propagated by Offsets, which the Plants send forth in great Plenty, for the Roots creep under Ground, and send forth Suckers, which may be taken off and transplanted in Spring. They love a pretty moist strong Soil, and endure the Cold of our ordinary Winters very well in the open Air. Some of these Plants were formerly preserved in Pots, and housed in Winter; but by later Experience they are found to thrive better in the full Ground.

EPHEMERUM. See Tradescantia.

EPIGÆA. *Lin. Gen. Plant.* 486. *Memecylum.* *Mitch.* 13. Trailing Arbutus.

The Characters are,

The Flower hath a double Empalement, which is perma-

nent; the outer is composed of 3, and the inner of one Leaf, divided at the Top into 5 Parts. The Flower is of the Salver Shape, with one Petal having a cylindrical Tube, which is longer than the Empalement, and hairy within. The Brim is cut into 5 Parts, which spread open. It hath 10 slender Stamina the Length of the Tube, which are fixed to the Base of the Petal, and are terminated by oblong Summits. In the Center is situated a globular hairy Germen, crowned by an obtuse quinquefid Stigma. The Germen becomes a depressed, half globular, 5 cornered Fruit, having 5 Cells, opening with 5 Valves, containing several Seeds.

We know but one Species of this Genus, *viz.*

EPIGÆA. *Lin. Gen. Plant.* 486. Trailing Arbutus.

This Plant grows naturally in North America, from whence it has been introduced to the English Gardens. It is a low Plant with a trailing shrubby Stalk, which puts out Roots at the Joints, and multiplies very fast. The Stalks are garnished with oblong rough Leaves, waved on their Edges. The Flowers are produced at the End of the Branches, in loose Bunches; these are white, and divided at the Top into 5 acute Segments, which spread open in Form of a Star. It flowers in July, but doth not produce Fruit in England.

The Plants are easily propagated by their trailing Stalks, which put out Roots at the Joints, so may be cut off from the old Plant, and placed in a shady Situation, and a moist Soil; the best Time for this is in Autumn, that the Plants may be well rooted before the Spring. If the Winter should prove very severe, it will be proper to lay a few dried Leaves, or some light Covering over them, which will prevent their being injured by Frost; after they are well rooted, they require no other Care but to keep them clean from Weeds.

EPILOBIUM. *Lin. Gen. Plant.* 426. *Chamænerion.* *Tourn. Inst.* Willow Herb, or French Willow.

The Characters are,

The Empalement of the Flower is composed of 4 ablong pointed Leaves, which are coloured. The Flower hath 4 bordered Petals, which spread open, and 8 Stamina, which are alternately shorter, terminated by oval compressed Summits. Below the Flower is situated a long cylindrical Germen, supporting a slender Style, crowned by an obtuse quadrifid Stigma. The Germen becomes a long cylindrical furrowed Capsule, with 5 Cells filled with oblong Seeds crowned with Down.

The Species are,

1. EPILOBIUM *foliis lanceolatis integerrimis.* *Lin. Hort. Cliff.* *Epilobium* with Spear-shaped Leaves, which are entire. This is the *Chamænerion latifolium vulgare.* *Tourn.* Common broad-leaved Willow Herb, or French Willow.

2. EPILOBIUM *foliis oppositis lanceolatis serratis.* *Lin. Hort. Cliff.* 145. *Epilobium* with opposite Spear-shaped Leaves, which are sawed on their Edges. This is the *Chamænerion villosum, magno flore purpureo.* *Tourn. Inst. R. H.* 303. Hoary Willow Herb with a large Flower, commonly called Codlins and Cream.

There are several other Species of this Genus, some of which grow naturally in shady Woods, and moist Places, in most Parts of England, where they are troublesome Weeds, so are seldom admitted into Gardens.

The 1st Sort here mentioned was formerly planted

in Gardens, for the Beauty of its Flowers; but as it usually spreads far by the creeping Roots, and over-runs all the neighbouring Plants, it has been cast out of most Gardens, but in some low moist Places, or in great Shade, if there was a Place assigned for this Plant, it will make a good Appearance when it is in Flower, and these Flowers are very proper to cut for Basons to adorn Chimnies in the Summer Season. This usually grows about 4 Feet high, with slender stiff Branches beset with Leaves, resembling those of the Willow, from whence it had the Name of Willow Herb, or French Willow. On the upper Part of the Stalks the Flowers are produced in long Spikes, which are of a fine Peach Colour; and, if the Season is not very hot, they will continue near a Month in Beauty. This Sort is found wild in divers Parts of England, but several Botanists have supposed it was only found in such Places where the Plants had been cast out of Gardens; however, I think it must be allowed to be a Native of this Country, since it is found in great Plenty in Woods at a great Distance from any Habitation, particularly in Charlton Forest, and other Woods in Suffex. It is a great Creeper at the Root, so may be easily propagated.

There is a Variety of this with white Flowers, which is planted in Gardens, but differs only in the Colour of the Flower; however some are fond of propagating these Varieties, for which Reason I mentioned it here.

The 2d Sort is found wild by the Side of Ditches and Rivers in many Parts of England; this Plant grows about 3 Feet high, and produces its Flowers on the Top of the Stalks, but these are much less beautiful than those of the 1st; and the Plant, being a great Rambler at the Root, is never admitted into Gardens. The Leaves of this Plant being rubbed, emit a Scent like scalded Apples, from whence some have given the Name of Codlins and Cream to this Plant.

EPIMEDIUM. *Lin. Gen. Plant.* 138. *Tourn. Infl. R. H.* 232. *Tab.* 117. *Raii. Meth. Pl.* 129. Barrenwort.

The Characters are,

The Flower hath a three-leaved Empalement, which falls off. It hath 4 obtuse oval Petals, which are concave, and spread open, and 4 Nectariums which are Cup-shaped, obtuse at the Bottom, and as large as the Petals. It hath 4 Stamina, terminated by oblong, erect, bilocular Summits. The oblong Germen is situated at the Bottom, supporting a short Style, crowned by a single Stigma. The Germen afterward becomes an oblong pointed Pod, with one Cell, opening with two Valves, inclosing many oblong Seeds.

This Plant hath a creeping Root, from which arise many Stalks about 9 Inches high, divided at the Top into 3, each of which is again divided into 3 smaller; upon each of these stands a stiff Heart-shaped Leaf, ending in a Point, of a pale green on the upper Side, but gray on the under. A little below the first Division of the Stalk, comes out the Foot Stalk of the Flowers, which is near 6 Inches long, dividing into smaller, each of these sustaining 3 Flowers; these are composed of 4 Leaves, placed in Form of a Cross, they are of a reddish Colour, with yellow Stripes on the Border. In the Center of the Flower arises the Style, situated upon the Germen, which turns to a slender Pod, containing many oblong Seeds. It flowers in May, and the Leaves decay in Autumn, but seldom ripens Seeds with

us; this may be owing to its spreading Roots, which exhaust the Nourishment from the Flowers and Fruit, as is frequently observed in many other Plants. The Roots, if planted in a good Border, should be every Year reduced, so as to keep them within Bounds, otherwise they will spread and interfere with the neighbouring Plants.

EPIPHYLLOSPERMOUS PLANTS [of *ιν*, upon, *Φύλλον*, a Leaf, and *Σπέρμα*, Gr. Seed,] such Plants as bear their Seeds on the Back of their Leaves, the same as Capillaries.

EQUISETUM, Horse-Tail. There are several Species of this Plant, which are found in England, on the Sides of Ditches, or in shady Woods; but as they are never cultivated in Gardens, I shall pass them over in this Place.

ERANTHEMUM. See Adonis.

ERICA. *Lin. Gen. Plant.* 435. *Tourn. Infl. R. H.* 602. *Tab.* 373. Heath; in French, *Bruyere*.

The Characters are,

The Flower hath a coloured permanent Empalement of 4 oval erect Leaves. It hath one swelling Petal, which is erect and quadrifid, and 8 hairy Stamina, which are fixed to the Receptacle, and terminated by bifid Summits. In the Bottom is situated the roundish Germen, supporting a declining Style, which is longer than the Stamina; crowned by a 4 cornered Stigma. The Germen afterward becomes a round Capsule, having 4 Cells, filled with small Seeds.

The Species are,

1. *ERICA antheris bicornibus inclusis, corollis inequalibus, campanulatis mediocribus foliis oppositis sagittatis.* *Lin. Sp. Plant.* 352. Heath with two Horns including the Summits, Bell-shaped unequal Petals, and middling Arrow-pointed Leaves placed opposite. This is the *Erica vulgaris glabra*. C. B. Common smooth Heath.

2. *ERICA antheris bifidis simplicibus exsertis, corollis campanulatis longioribus, foliis quinis linearibus patentibus.* *Lin. Sp. Plant.* 355. Heath with a single bifid Summit standing out, a longer Bell-shaped Petal, and five narrow spreading Leaves. This is the *Erica foliis eridis, multiflora*. J. B. Pine-leaved Heath with many Flowers.

3. *ERICA antheris bicornibus inclusis, corollis ovatis racemosis, foliis ternis glabris linearibus.* *Lin. Sp. Plant.* 352. Heath with two Horns including the Summits, oval branchy Petals, and three long narrow smooth Leaves. This is the *Erica humilis, cortice cinereo, arbuti flore*. C. B. P. 486. Dwarf Heath with an Ash-coloured Bark, and Strawberry Tree Flower.

4. *ERICA antheris simplicibus inclusis, corollis ovatis irregularibus, floribus ternoracemosis, foliis ternis ciliatis.* *Læst. Epist.* 2. p. 9. *Lin. Sp. Plant.* 354. Heath with single Summits, oval irregular Petals, triple branching Flowers, and hairy Leaves placed by Threes.

These Plants grow wild upon barren uncultivated Places, in divers Parts of England; but notwithstanding their Commonness, yet they deserve a place in small Quarters of humble flowering Shrubs, where, by the Beauty and long Continuance of their Flowers, together with their Diversity of the Leaves, they make an agreeable Variety.

These are seldom propagated in Gardens, and so not to be had from the Nurseries, but may be taken up, with a Ball of Earth to their Roots, from the natural Places.

Places of their Growth in Autumn, and may be transplanted into the Garden. The Soil where they are planted should not be dunged, nor should you bestow any other Culture on them, than clearing them from Weeds; for the less the Ground is dug, the better these will thrive; for they commonly shoot their Roots near the Surface, which, in digging, are subject to be hurt, whereby the Plant is often destroyed; these may also be propagated by Seeds, but this being a tedious Method, the other is much preferable to it.

ERICA BACCIFERA. See Empetrum.

ERIGERON. Lin. Gen. Plant. 835. Senecionis. Sp. Dill. Conyzella. Dill. Groundsel.

The Characters are,

It hath a compound radicated Flower, composed of many hermaphrodite Florets, which form the Disk, and female half Florets, which make the Rays; these are contained in one oblong scaly Empalement. The hermaphrodite Florets are Funnel-shaped, and cut at Top into 5 Parts; these have 5 hairy Stamina, terminated by cylindrical Summits; they have a small Germen, crowned with Down, longer than the Petal. On the Germen sits a slender Style the Length of the Down, crowned by 2 oblong Stigmas; the Germen becomes a small oblong Seed, crowned with long Down. The female half Florets, which compose the Rays, have one Side of their Petals stretched out like a Tongue; these have no Stamina, but a small downy Germen, supporting a slender Style, which is hairy, crowned by 2 slender Stigmas. The Germen becomes a Seed like the hermaphrodite Florets.

The Species are,

1. ERIGERON pedunculis unifloris lateralibus, calycibus squarrosis. Hort. Upf. 258. Groundsel with one Flower on a Foot Stalk, proceeding from the Side of the Stalk, and a rough Empalement. This is the Conyzas Theophrasti, major Dioscoridis. C. B. P. Male Fleabane of Theophrastus, greater Fleabane of Dioscorides.

2. ERIGERON pedunculis alternis, unifloris. Hort. Cliff. Groundsel with alternate Foot Stalks having one Flower. This is the Conyza cœrulea acris. Blue acrid Fleabane.

3. ERIGERON foliis basi revolutis. Lin. Sp. Plant. 863. Groundsel whose Leaves are curved at their Base. This is the Senecio Bonariensis purpurascens, foliis imis coronopif. Hort. Elth. 344. Purplish Groundsel of Buenos Ayres, with under Leaves like Hartshorn Plantain.

4. ERIGERON caule floribusque paniculatis. Hort. Cliff. 407. Groundsel with a paniculated Stalk and Flowers. This is the Virga aurea Virginiana annua. Zan. Hist. 205. Annual Virginia Golden Rod.

5. ERIGERON caule subbifloro, calyce subbirsuto. Lin. Sp. Plant. 864. Groundsel with two Flowers on a Stalk, and hairy Empalements. This is the Conyza cœrulea Alpina. C. B. P. 265. Blue Alpine Fleabane.

The 1st Sort grows naturally in the South of France and in Italy; this hath a perennial Root, from which arise several upright Stalks near 3 Feet high, garnished with oblong oval Leaves which are hairy, and sit close to the Stalk; they are placed alternate, and are 4 Inches long, and 2 broad in the Middle; these in warm Weather sweat out a clammy Juice. The Flowers are produced single upon pretty long Foot Stalks, some arising from the Side of the Stalk, and others terminate it; they are yellow, and have an agreeable Odour. They flower in July, and the Seeds ripen in Autumn.

This Plant is propagated by Seeds, which, if sown in Autumn, will more certainly succeed, than those sown in Spring. When the Plants come up, they should be thinned if too close, and kept clean from Weeds till Autumn, when they should be transplanted where they are to remain. They delight in a dry Soil, and sunny Exposure. The 2d Year the Plants will flower and perfect Seeds, but the Roots will continue several Years, and annually produce their Flowers and Seeds.

The other 4 Sorts are preserved in Botanick Gardens for Variety, but are seldom admitted into Gardens for Pleasure. The 5th Sort is a perennial Plant, which grows naturally on the Alps, and may be propagated by Seeds in the same Manner as the first Sort, but should have a shady Situation, and a moist Soil.

The others are annual Plants, which, if once admitted into a Garden, and suffered to scatter their Seeds, will become very troublesome Weeds there.

ERINUS. Lin. Gen. Plant. 689. Ageratum. Tourn.

The Characters are,

The Flower hath a permanent Empalement, composed of 5 equal Leaves, it hath one Petal which is tubulous, and of the ringent Kind, cut into 5 equal Segments which spread open, 3 standing upward from the upper Lip, and 2 turn downward. It hath 4 Stamina situated within the Tube, 2 of which are a little longer than the other, terminated by small Summits. In the Bottom of the Tube is the oval Germen, supporting a short Style, crowned by a Head-shaped Stigma. The Germen becomes an oval Capsule, covered by the Empalement, having 2 Cells filled with small Seeds.

The Species are,

1. ERINUS floribus racemosis. Lin. Sp. Pl. 630. Erinus with branching Flowers. This is the Ageratum serratum Alpinum glabrum, flore purpurascens. Tourn. Smooth sawed Alpine Ageratum, having a purplish Flower.

2. ERINUS tomentosus, caulibus procumbentibus, floribus sessilibus axillaribus. Woolly Erinus with trailing Stalks, and Flowers sitting close to their Sides. This is the Ageratum Americanum procumbens, gnaphalii facie, floribus ad foliorum nodos. Trailing American Ageratum with the Appearance of Cudweed, and Flowers growing at the Knots of the Leaves.

3. ERINUS caule erecto, foliis lanceolatis oppositis, floribus laxè spicatis terminalibus. Erinus with an upright Stalk, Spear-shaped Leaves placed opposite, and Flowers growing in loose Spikes, terminating the Stalks. This is the Ageratum Americanum erectum spicatum, flore purpureo. Houst. Mss. Upright American Ageratum with Spikes of purple Flowers.

4. ERINUS caule erecto fruticoso, foliis ovato-lanceolatis serratis, alternis, floribus axillaribus. Erinus with a shrubby erect Stalk, oval Spear-shaped sawed Leaves, placed alternate, and Flowers on the Sides of the Stalk. This is the Ageratum frutescens, foliis dentatis latioribus, villosum. Houst. Mss. Shrubby hoary American Ageratum with broad indented Leaves.

5. ERINUS caule ramoso procumbente, foliis ovatis serratis glabris oppositis, floribus verticillatis. Erinus with a branching trailing Stalk, oval, smooth, sawed Leaves placed opposite, and Flowers growing in Whorls round the Stalks. Ageratum Americanum procumbens, foliis subrotundis serratis glabris. Houst. Mss. Trailing American Ageratum with roundish, smooth, sawed Leaves.

6. ERINUS

6. *ERINUS caulibus procumbentibus, foliis ovatis glabris, floribus singulis alaribus, pedunculis longioribus. Erinus* with trailing Stalks, oval smooth Leaves, and single Flowers on the Sides of the Stalks, having longer Foot Stalks. This is the *Ageratum Americanum, procumbens, glabrum, floribus luteis, longis pediculis insidentibus. Houst. Mss.* Smooth trailing American *Ageratum*, with yellow Flowers sitting upon long Foot Stalks.

The 1st Sort grows naturally on the *Alps* and *Helvetian* Mountains; this is a very low Plant, whose Leaves lie close to the Ground, growing in close Tufts; they are about Half an Inch long, and one Eighth of an Inch broad, sawed on their Edges, and of a dark green; between these arise the Flower Stalk, which is scarce 2 Inches high, supporting a loose Bunch of purple Flowers, which stand erect. These appear in *May*, and sometimes are succeeded by ripe Seeds in *July*.

It is propagated by parting the Roots, the best Time for this is in Autumn; they must have a shady Situation, and a loamy Soil without Dung, for in rich Earth these Plants are very subject to rot.

The 2d Sort was sent me by the late Dr. *Houssoun*, from *La Vera Cruz*, where he found it growing naturally; this sends out several trailing Stalks, about 6 Inches long, closely garnished with small oval Leaves, placed on every Side; they are very white and woolly, and at the Joints just above the Leaves, come out the Flowers, sitting very close to the Stalks; these are white, and are succeeded by round Capsules, having 2 Cells, filled with small Seeds; this Plant has great Resemblance at a distance to the Sea Cudweed.

The 3d Sort was discovered in the same Country; this hath an upright Stalk 2 Feet high, garnished with Spear-shaped Leaves placed opposite, and toward the Top of the Stalk is produced two smaller Branches placed opposite, which stand erect; these, and the middle Stalk, are terminated by loose Spikes of purple Flowers, succeeded by oval Vessels filled with small Seeds.

The 4th Sort rises with a shrubby Stalk about 4 Feet high, dividing into several small Branches, which are hairy; these are garnished with oval Spear-shaped Leaves deeply sawed on their Edges, placed alternate, and have pretty long Foot Stalks. The Flowers come out from the Side of the Stalks, sometimes single, at other Times 2 or 3 at a Joint, sitting pretty close to the Stalks, they are white, and are succeeded by round Seed Vessels, filled with small Seeds.

The 5th Sort sends out many trailing smooth Stalks, which branch out very much on every Side; they grow about 7 or 8 Inches long, and are garnished with small oval Leaves placed opposite. The Flowers come out in Whorls, sitting very close to the Stalks, they are white, and make but little Appearance; these are succeeded by round Capsules filled with small Seeds.

The 6th Sort sends out several trailing Stalks about 6 Inches long, which divide into many smaller Branches, garnished with small oval Leaves, standing opposite. The Flowers come out singly from the Side of the Stalk, of a bright yellow, and stand on long slender Foot Stalks, these are succeeded by oval Seed Vessels filled with small Seeds.

The 4th Sort is a perennial shrubby Plant, which will

continue several Years, if kept in a warm Stove; but the 2d, 3d, 5th, and 6th Sorts are annual, decaying soon after they have perfected their Seeds.

These are propagated by Seeds, which should be sown in Pots filled with light Earth, and plunged into a moderate hot Bed, where sometimes the Plants will come up in 5 or 6 Weeks; and at other Times the Seeds do not vegetate till the following Spring; this happens when they have been kept long after they were gathered. When the Plants are fit to remove, they should be each planted in a small Pot filled with light Earth, not too rich with Dung, and then plunged into a hot Bed of Tanners Bark; when they have taken new Root, they should be treated as other Plants from those Countries, by admitting proper Air to them at all Times when the Weather is warm, and frequently refreshing them with Water; with this Management the annual Sorts will flower in *July* and *August*, and frequently ripen their Seeds in Autumn, if the Plants are brought forward early in Spring, otherwise the Winter will come on before their Seeds ripen.

The shrubby Kind must be placed in the Bark Stove in Autumn, and during the Winter the Plants should be frequently refreshed with Water, but it must not be given them in large Quantities, nor too often repeated in cold Weather, for Moisture will then destroy them; the 2d Year the Plants will flower and perfect Seeds.

ERIOCEPHALUS. Hort. Elb. 110. Lin. G. P. 890.

The Characters are,

It hath a radiated Flower, composed of female half Florets which form the Rays, and hermaphrodite Florets, which form the Disk; these are included in one common scaly Empalement. The hermaphrodite Flowers are Funnel-shaped, and cut into 5 Parts at the Brim, which spread open; these have 5 short hairy Stamina, terminated by cylindrical Summits; they have a small naked Germen, supporting a single Style, crowned by a pointed Stigma, these are barren. The female Flowers have their Petals stretched out on one Side like a Tongue, and divided at the End into 3 small Lobes; these have no Stamina, but an oval naked Germen, with a single Style, crowned by an inflexed Stigma; these have one naked Seed sitting on the naked plain Receptacle.

We have but one Species of this Genus, viz.

ERIOCEPHALUS. Lin. Sp. Pl. 926. We have no English Title for it. This is the *Eriocephalus sempervirens, foliis fasciculatis & digitatis. Hort. Elb. 132.* Evergreen *Eriocephalus* with fingered Leaves growing in Bunches.

This Plant hath a shrubby Stalk, which rises from 3 to 4 Feet high, putting out many Side Branches the whole Length; these are closely garnished with white woolly Leaves, which come out in Clusters; some of these are taper and entire, others are divided into 3 or 5 Parts, which spread open like a Hand; they have a strong Smell when bruised, approaching to that of the Lavender Cotton, but not quite so rank. The Flowers are produced in small Clusters at the Extremity of the Branches, standing erect, they are tubulous. The female Florets which compose the Rays, form a Hollow, in the Middle of which the Hermaphrodite Flowers are situated which form the Disk. The Border is white, with a little reddish Cast on the Inside, and the Disk is

of a purplish Colour. The Flowers appear in Autumn, but do not ripen Seeds here.

This Plant is propagated by Cuttings, which may be planted any Time from May, to the Middle of August, for if they are planted later in the Season, there will not be Time for them to get good Root before Winter; these Cuttings should be planted in small Pots filled with light Earth, and plunged into a very moderate hot Bed, where they should be shaded from the Sun till they have taken Root; they must be refreshed with Water 2 or 3 Times a Week, but should not have too much at each Time, for much Moisture is very hurtful to them. When the Cuttings have taken Root, they should be gradually inured to the open Air, to prevent their Shoots from being drawn up weak; afterward they should be removed into the open Air, and placed in a sheltered Situation, where they may remain till October, when they must be removed into an airy Glass Case, that they may have as much Sun as possible, and enjoy the free Air in mild Weather, but secured from Frost and damp Air, either of which will soon destroy them. During the Winter they must be sparingly watered; but, in the Summer, when the Plants are placed in the open Air, they will require to be frequently refreshed with Water in hot Weather.

These Plants retain their Leaves all the Year, so add to the Variety of Exoticks in the Winter Season.

ERUCA. *Tourn. Inst. R. H.* 226. *Tab.* 111. *Brassica. Lin. Gen.* 734. Rocket; in French, *Roquette*.

The Characters are,

The Empalement is composed of 4 oblong Leaves, which stand erect, forming a Tube. The Flower hath 4 oblong Petals placed in Form of a Cross, which are rounded at their Ends, where they are broad, but narrow at their Base, and are much longer than the Empalement. It hath 6 Stamina, 4 of which are a little longer than the Empalement; the other 2 are shorter, terminated by acute Summits. It hath an oblong taper Germen, supporting a short Style, crowned by an obtuse bifid Stigma. The Germen becomes a taper-cornered Pod with 2 Cells, filled with roundish Seeds.

The Species are,

1. ERUCA foliis pinnato-laciniatis, laciniis exterioribus majoribus. Rocket with Wing-shaped jagged Leaves, whose outer Segments are the largest. This is the *Eruca sativa major annua, flore albo striato*. *J. B.* Greater Garden annual Rocket with a white striped Flower.

2. ERUCA foliis lanceolatis, pinnato-dentatis, caule nudo simplici. Rocket with Spear-shaped indented Leaves, and a naked single Stalk. This is the *Eruca bellidis folio*. *Mor. Hist.* Rocket with a Daisy Leaf.

3. ERUCA foliis pinnatis glabris, caule ramoso, floribus terminalibus. Rocket with winged smooth Leaves, a branching Stalk terminated by Flowers. This is the *Eruca tenuifolia perennis, flore luteo*. *J. B.* 2. 861. Narrow-leaved perennial Rocket with a yellow Flower.

4. ERUCA foliis dentato-pinnatifidis birsutis, caule hispido, siliquis levibus. Rocket with indented, Wing-pointed, hairy Leaves, a rough Stalk, and smooth Pods. *Eruca sylvestris, major, lutea, caule aspero*. *C. B. P.* Greater wild Saffron-coloured Rocket with a rough Stalk.

5. ERUCA foliis pinnatis, foliolis lanceolatis pinnatifidis. *Prod. Leyd.* 342. Rocket with winged Leaves, whose Lobes are Spear-shaped, and Wing-pointed.

Eruca Tanacetifolia. H. R. Par. Rocket with a Tansey Leaf.

6. ERUCA foliis sinuato-pinnatis, sessilibus, caule ramoso. Rocket with Wing-shaped sinuated Leaves, sitting close to the Stalks, which are branching. This is the *Eruca ficula Bursæ pastoris folio*. *C. B. P.* 98. Sicilian Rocket with a Shepherd's Purse Leaf.

The 1st Sort is an annual Plant, which was formerly much cultivated in Gardens as a Sallad Herb, but at present is little known, being long rejected on Account of its strong ungrateful Smell. It stands in the List of medicinal Plants, but at present is seldom used, though it is reckoned a Provocative and a good Diuretick. If it is propagated for Sallads, the Seeds should be sown in Drills, as usually practised for other small Sallad Herbs; for it must be eaten young, otherwise it will be too strong for most Palates. The Winter and Spring Seasons are the Times when this Herb is used, for when it is sown in the Summer, the Plants soon run up to Seed, and are then too rank. Where it is cultivated for the Seed, which is sometimes used in Medicine, they should be sown in March, on an open Spot of Ground; and when the Plants have put out 4 Leaves, the Ground should be hoed to destroy the Weeds, and the Plants thinned, so as to leave them 3 or 4 Inches asunder; in about 5 Weeks after, the Ground should be a 2d Time hoed to destroy the Weeds, which, if well performed, will prevent them from growing to injure the Plants, till the Seeds are ripe; when the Plants should be drawn up, and spread upon Cloths in the Sun for 2 or 3 Days to dry, then the Seeds may be beaten out of the Pods, and put up for Use.

The 2d Sort grows naturally in the South of France and Italy, where it is often eaten as a Sallad Herb; this hath many Spear-shaped Leaves arising from the Root, which are 4 or 5 Inches long, and one Inch broad in the Middle, regularly indented on their Edges, and spread on the Ground; the Stalks are single, and rise about a Foot high; they are naked, seldom having more than one Leaf, which is situated at the Bottom; the Flowers grow in loose Bunches on the Top of the Stalks, succeeded by Pods 2 Inches long, having 2 Cells, filled with small round Seeds. This is an annual Plant, and may be propagated as the former.

The 3d Sort grows naturally about Paris, and in many Parts of Europe; the Leaves are narrow, and regularly divided like a winged Leaf; the Stalks branch out upward, and are terminated by loose Spikes of yellow Flowers. This hath a perennial Root, and annual Stalk.

The 4th Sort grows naturally upon old Walls and Buildings in many Parts of England, where it continues flowering all the Summer, but is rarely admitted into Gardens. It is sometimes used in Medicine.

The 5th Sort grows naturally about Turin, from whence I received it. This hath fine divided Leaves, somewhat like those of Tansey, but are of a hoary green Colour; the Stalks rise a Foot and a Half high, which are fully garnished with Leaves of the same Form, but gradually diminish in their Size upward; the Flowers are produced in Clusters at the Top of the Stalks, they are small, and of a pale yellow Colour; these are succeeded by slender taper Pods 2 Inches long, which contain 2 Rows of small round Seeds.

The

The 6th Sort grows naturally in *Italy* and *Spain*; this is an annual Plant, with many oblong Leaves, which are smooth and regularly sinuated on their Sides, in Form of a winged Leaf; they are 5 or 6 Inches long, and one Inch and a Half broad, of a light green, having a hot biting Taste; the Stalks rise about a Foot high, they are strong, and divide into several Branches; these are garnished with a single Leaf at each Joint, shaped like those below, but smaller. The Flowers are produced in loose Clusters at the End of the Branches; these are white, and near as large as those of the Garden Rocket, and are succeeded by taper Pods 3 Inches long, containing 2 Rows of round Seeds.

These Plants are preserved in some Gardens for the Sake of Variety, therefore they are here mentioned; and those who are inclined to cultivate them, may do it by sowing their Seeds on a Bed of light Earth in an open Situation; and when the Plants come up, they will require no other Culture but to thin them, and keep them clear from Weeds. They flower in *June* and *July*, and their Seeds ripen in *August*.

ERUCAGO. See Bunias.

ERVUM. *Lin. Gen. Pl.* 784. *Tourn.* Bitter Vetch.

The Characters are,

The Emplacement of the Flower is divided into 5 equal Parts, which end in acute Points; the Flower is of the Butterfly Kind, having a large roundish plain Standard, 2 obtuse Wings half the Length of the Standard, and a shorter Keel which is pointed. It hath 10 Stamina, 9 joined, and one standing separate, terminated by single Summits. It hath an oblong Germen, supporting a rising Style, crowned by an obtuse Stigma. The Germen becomes an oblong taper Pod.

The Species are,

1. ERVUM *germinibus undato-plicatis*. *Hort. Up.* 224. *Ervum* whose Germens are waved and folded. This is the *Ervum verum*. *Camer. Hort.* True Bitter Vetch.

2. ERVUM *feminibus compressis convexis*. *Lin. Sp. Pl.* 738. *Ervum* with compressed Seeds which are convex. This is the *Lens vulgaris*. *C. B. P.* 346. Common Lentils.

3. ERVUM *pedunculis unifloris*. *Lin. Sp. Plant.* 738. *Ervum* with one Flower on each Foot Stalk. This is the *Lens monanthos*. *H. L.* 360. One flowered Lentil.

4. ERVUM *pedunculis subbifloris, feminibus globosis quaternis*. *Flor. Suec.* 606. *Ervum* with two Flowers on each Foot Stalk, and four globular Seeds in each Pod. This is the *Vicia segetum singularibus siliquis glabris*. *C. B. P.* 345. Corn Vetch with single smooth Pods.

5. ERVUM *pedunculis multifloris, feminibus globosis binis*. *Lin. Sp. Plant.* 738. *Ervum* having many Flowers on a Foot Stalk, and two globular Seeds in each Pod. This is the *Vicia segetum cum siliquis plurimis hirsutis*. *C. B. P.* 345. Corn Vetch having many hairy Pods.

The 1st Sort grows naturally in *Italy* and *Spain*: It is an annual, and rises with angular weak Stalks a Foot and a Half high, garnished at each Joint with one winged Leaf, composed of 14 or 15 Pair of Lobes, very like those of the Vetch, but narrower; the Flowers come out from the Side of the Stalks on Foot Stalks an Inch long, each sustaining 2 pale coloured Flowers, succeeded by short Pods a little compressed, each having 3 or 4 round Seeds; the Pods swell at the Place where each

Seed is lodged, so are called jointed Pods. The Seed of this Plant ground to Flour, is sometimes used in Medicine; and the green Herb for feeding Cattle in some Countries, but it is not worth cultivating for that Purpose in *England*.

The 2d Sort is the common Lentil, which is cultivated in many Parts of *England*, either as Fodder for Cattle, or for the Seeds, which are frequently used for meagre Soups. This is also an annual Plant, and is one of the least of the Pulse Kind, which is cultivated: This rises with weak Stalks a Foot and a Half high, garnished with winged Leaves at each Joint, composed of several Pair of narrow Lobes, terminated by a Tendril or Clasper, which fastens to any neighbouring Plant, and is thereby supported; the Flowers come out upon short Foot Stalks from the Side of the Branches; they are small, of a pale purple Colour, 3 or 4 standing on a Foot Stalk; these are succeeded by short flat Pods, containing 2 or 3 Seeds, which are flat, round, and a little convex in the Middle. The Flowers appear in *May*, and the Seeds ripen in *July*. The Seeds are sown in *March*, where the Land is dry, but in moist Ground, the best Time is in *April*. The usual Quantity allowed to an Acre of Land, is from one Bushel and a Half to two Bushels. If these are sown in Drills as Peas, they will succeed better than when they are sown in broad Cast; The Drills should be a Foot and a Half asunder, to allow Room for the Dutch Hoe to clean the Ground between them; for if the Weeds are permitted to grow among them, they will get above the Lentils and starve them. The Seeds of these will ripen in *July*, when the Plants should be cut and dried, and afterward the Seeds threshed out for Use.

The Seeds of Lentils are frequently the common Food of the poorer Sort of People in some of the Islands of the *Archipelago*, and other warm Countries.

There is another Sort of Lentil which has been cultivated of late Years in *England*, by the Title of *French Lentil*. This is the *Lens major* of *Caspar Baubin*, and is undoubtedly a different Species from the common, being twice the Size, both in Plant and Seed, and constantly produces the same from Seeds, though they do not differ much in their Characters, but this is much better worth cultivating than the other. This Pulse is frequently called Tills in many Parts of *England*.

The 3d Sort is very like the common Lentil, but differs from it, in having but one Flower on each Foot Stalk, whereas the other has 3 or 4, but in other Respects is the same, so may be cultivated in the same Manner.

The 4th and 5th Sorts are small annual Vetches, which grow naturally among the Wheat and Rye in *England*, so are not admitted into Gardens; they are only mentioned here as Weeds, which may be easily rooted out of the Fields, if they are cut up when they begin to flower, and not permitted to ripen their Seeds; for as they have annual Roots, so if they do not scatter their Seeds, they may be soon destroyed.

ERVUM ORIENTALE. See Sophora.

ERYNGIUM. *Lin. Gen. Plant.* 287. *Tourn. Inst. R. H.* 327. *Tab.* 173. Sea Holly or Eryngo.

The Characters are,

It hath many small Flowers sitting upon one common canalicula

nical Receptacle, whose Involucrum is composed of several plain Leaves; the Flowers have a 5 leaved erect Empalement, coloured on the upper Part, sitting upon the Germen; these form a roundish general Umbel, which is uniform. The Flowers have 5 oblong Petals, which are turned inward at Top and Bottom, and 5 erect hairy Stamina, standing above the Flowers, terminated by oblong Summits; under the Empalement is situated a prickly Germen, supporting two slender Styles, crowned by single Stigmas. The Germen becomes an oval Fruit divided in 2 Parts, each having one oblong taper Seed.

The Species are,

1. *ERYNGIUM foliis radicalibus subrotundis plicatis spinosis, capitulis pedunculatis.* Hort. Cliff. 87. Sea Holly whose lower Leaves are folded, roundish, and prickly, and Flower Heads having Foot Stalks. This is the *Eryngium maritimum*. C. B. 386. Sea Holly, or Eryngo.

2. *ERYNGIUM foliis radicalibus pinnatis tripartitis.* Hort. Cliff. 87. Sea Holly, whose lower Leaves are winged and tripartite. This is the *Eryngium vulgare*. C. B. 386. Common Eryngo.

3. *ERYNGIUM foliis radicalibus ovalibus planis crenatis, capitulis pedunculatis.* Hort. Cliff. 87. Sea Holly whose lower Leaves are plain, oval, and crenated, with Flower Heads having Foot Stalks. *Eryngium latifolium planum*. C. B. 386. Broad leaved plain Eryngo.

4. *ERYNGIUM foliis radicalibus digitato-multifidis.* Lin. Sp. Plant. 233. Eryngo whose lower Leaves are fingered, and end in many Points. This is the *Eryngium montanum amethystinum*. C. B. 386. Purple Violet-coloured Mountain Eryngo.

5. *ERYNGIUM foliis radicalibus rotundato-multifidis, capitulis pedunculatis.* Eryngo whose lower Leaves are roundish and multifid, and having Foot Stalks to the Heads of Flowers. This is the *Eryngium Alpinum amethystinum, capitulo majore pallescente.* Tourn. Alpine Eryngo with a large pale coloured Head.

6. *ERYNGIUM foliis radicalibus pinnatis, serrato-spinosis, foliolis trifidis.* Eryngo whose lower Leaves are winged, spiny and indented, and the smaller ones trifid. This is the *Eryngium Orientale, foliis trifidis.* T. Cor. Oriental Eryngo with trifid Leaves.

7. *ERYNGIUM foliis gladiatis utrinque laxè serratis, denticulis subulatis.* Lin. Hort. Cliff. American Sea Holly with Leaves like the Aloe, lightly sawed, commonly called Rattlesnake Weed in America.

8. *ERYNGIUM foliis radicalibus oblongis incis, caule dichotomo, capitulis sessilibus.* Hort. Cliff. 87. Eryngo with oblong lower Leaves which are cut, a Stalk divided by Pairs, and Heads sitting close. This is the *Eryngium planum minus*. C. B. P. Lesser plain Eryngo.

9. *ERYNGIUM foliis radicalibus cordatis oblongis, caulinis pinnatifidis, capitulo subcylindrico.* Lin. Sp. Plant. Eryngo with oblong Heart-shaped lower Leaves, those upon the Stalks Wing-pointed, and cylindrical Heads. *Eryngium Alpinum caeruleum, capitulis dispaci.* C. B. P. Blue Alpine Eryngo, with Heads like the Teasel.

10. *ERYNGIUM foliis gladiatis serrato-spinosis, floralibus multifidis.* Lin. Sp. Plant. 232. Eryngo with Sword-shaped Leaves having spiny Saws, the upper Leaves ending in many Points. *Eryngium foliis angustis serratis scetidum.* Sloan. Cat. 127. Stinking Eryngo having narrow sawed Leaves, commonly called Feverweed.

The first of these Species grows in great Plenty on the sandy and gravelly Shores in divers Parts of England, the Roots of which are candied, and sent to London for medicinal Use, and is the true Eryngo. This hath creeping Roots, which run deep into the Ground; the Leaves are roundish, stiff, and of a grey Colour, set with sharp Spines on the Edges. The Stalks rise a Foot high, and divide upward into two or three; they are smooth, and garnished at each Joint with Leaves of the same Form as the lower, but smaller, and embrace the Stalks with their Base; at the End of the Branches, come out the Flowers in roundish prickly Heads; under each is situated a Range of narrow, stiff, prickly Leaves, spreading like the Rays of a Star; the Flowers are of a whitish blue Colour. They appear in July, and the Stalks decay in Autumn.

This Sort will grow in a Garden, if planted in a gravelly Soil, and produce their Flowers annually; but the Roots will not be near so large or fleshy, as those which grow on the Sea Shore, where they are flowed with Salt Water. The best Time to transplant the Roots, is in Autumn, when their Leaves decay; the young Roots are much better to remove than the old, because they are furnished with Fibres, so will readily take Root: When these are fixed in the Ground, they should remain unremoved; and if they are kept clean from Weeds, it is all the Culture they require.

The 2d Sort grows naturally in several Parts of England, and is a very troublesome Weed; for the Roots run deep in the Ground, so are not easily destroyed by the Plough; and they spread and multiply greatly, to the Prejudice of whatever is sown or planted on the Land, therefore it is not admitted into Gardens.

The 3d Sort makes a very pretty Appearance when in flower, especially that with the blue Stalks and Flowers, for there is a Variety of this with white Flowers and Stalks; as this doth not spread at the Root, but keeps within Bounds, so a few of the Plants should be allowed a Place in the Pleasure Garden. This is propagated by Seeds, which, if sown in Autumn, will more certainly succeed, than when sown in Spring, for the latter commonly remains in the Ground a Year before they vegetate; and if the Seeds are sown where the Plants are to remain, they will flower stronger than those which are transplanted; for as they have long downright Roots, so these are commonly broken in removing, which greatly weakens the Plants. The Culture they require is to thin them where too near, keep them clean from Weeds, and dig the Ground about them every Spring before they shoot.

The Stalks will rise from 2 to 3 Feet high, the lower Leaves are oval and plain; those of the white Sort, are of a lighter green than those of the blue; the upper Part of the Stalks of the white are of that Colour, those of the blue are of the Colour of Amethyst; the Stalks divide upward, where they are garnished with Leaves divided into many Points ending with Spines; the Flowers are produced in oval Heads, at the Top of the Stalk, standing on separate Foot Stalks. The Flowers come out in July, and the Seeds ripen in September.

The 4th Sort grows naturally upon the Mountains of Syria, and also upon the Apennines. The lower Leaves are divided like the Fingers of a Hand, into 5 or 6 Segments,

ments, which are very much cut at their Extremities into many Parts which have small Spines; the Stalk rises about 2 Feet high, which is garnished with smaller and more divided Leaves; the upper Part of the Stalk, and also the Heads of Flowers, are of the finest Amethyst Colour, so make a very fine Appearance. This Sort flowers in *July*, and when the Autumn proves dry, their Seeds will ripen in *September*, but in wet Seasons the Seeds never ripen in *England*. This is propagated by Seeds, as the former Sort.

The 5th Sort has been supposed by many, to be only a Variety of the 4th; but I have propagated it by Seeds more than 20 Years, without finding the least Alteration, so make no Doubt of its being a distinct Species. The lower Leaves of this are very much divided, and the Extremity of the Segments form an Oval or Circle; these are divided into many fine Parts, which end in Spines; they are of a whitish grey in the Middle, and green on the Borders. The Stalks rise about 2 Feet high, garnished at the Joints with smaller Leaves which are finely cut; the Flowers terminate the Stalk, they are of a light blue Colour, and grow in larger Heads than either of the former Sorts. It flowers in *June* and *July*, and the Seeds ripen in Autumn. This grows naturally on the *Alps*; it is perennial, and may be propagated by Seeds as the former.

The 6th Sort was discovered by Dr. *Tournefort* in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*. This hath a perennial Root, the lower Leaves are regularly divided into 7 or 9 Parts to the Mid-rib, as the other winged Leaves; these Segments are sawed on their Edges, which end in sharp Thorns. The Stalks rise a Foot and a Half high, sending out Side Branches; these are garnished with stiff Leaves, divided into narrower Segments than the lower, and terminated by 3 Points. The Flowers terminate the Stalks, sitting close among the Leaves, and are of a fine blue, as are also the Leaves on the upper Part of the Stalks, so they make a pretty Appearance. This flowers in *July*, but seldom ripens Seeds in *England*. It is propagated as the 3 former Sorts, and the Plants require the same Treatment.

The 7th Sort grows naturally in *Virginia* and *Carolina*, where it is titled Rattlesnake Weed, from its Virtues of curing the Bite of that venomous Reptile. This hath a perennial Root, from which arise several long Leaves, sawed on their Edges; these Leaves are disposed round the Root, after the same Form of the Aloe or Yucca; they are of a grey Colour, near a Foot long, and one Inch and a Half broad, stiff, and end in Spines. The Stalk is strong, grows a Foot and a Half high, dividing upward into several Foot Stalks, each being terminated by an oval Head of Flowers, shaped like those of the former Sorts; they are white, with a little Cast of pale blue. This Sort flowers in *July*, but unless the Season is very warm, the Seeds do not ripen here.

This Sort is propagated by Seeds, which, if sown in Pots and plunged into a moderate hot Bed, the Plants will come up much sooner than those which are sown in the full Ground, and will be much stronger before the Winter. When the Plants are fit to remove, they should be each planted in a small Pot, filled with light Earth; and if they are plunged into a moderate hot Bed, it will

forward their taking Root; then they must be gradually inured to bear the open Air, into which they may be removed toward the latter End of *May*, and placed among other hardy exoticks. When the Plants have filled these Pots with their Roots, some of them may be shaken out, and planted in a warm Border; the others may be put into larger Pots, and in Autumn placed under a common Frame, where they may be exposed to the free Air in mild Weather, but sheltered from severe Frost: The following Spring these may be turned out of the Pots, and planted in a warm Situation, where they will endure the Cold of our ordinary Winters very well; and if in severe Frost they are covered with Straw, Peas Haulm, or any such light Covering, it will secure them from Injury.

The 8th Sort grows naturally in *Spain* and *Italy*. This puts out oblong plain Leaves from the Root, which are cut on their Edges; the Stalks rise about a Foot high, and branch out into many Divisions, which are regular by Pairs, and at each of these Divisions is situated a small Head of Flowers, sitting very close between the Branches. These have no great Beauty, so are seldom cultivated in Gardens, except for Variety.

The 9th Sort grows naturally on the Mountains of *Helvetia* and *Italy*. The Root is perennial, the lower Leaves are oblong, Heart-shaped, and plain; the Stalks rise from 2 to 3 Feet high, branching out on the Side upward; these are garnished with stiff Leaves, deeply divided, ending in many Points with sharp Spines; the Flowers terminate the Stalks, they are collected into conical Heads, and are of a light blue Colour, as are also the upper Part of the Stalks. This flowers in *July*, and the Seeds are ripe in *September*; it is propagated by Seeds as the other Sorts.

The 10th Sort grows naturally in the *West-Indies*, where it is much used in Medicine, in the Cure of Fevers, from whence it hath the Appellation of Feverweed in those Countries. The Roots are composed of many small Fibres, which spread near the Surface; the lower Leaves are 6 or 7 Inches long; they are narrow at their Base, and enlarge upward to an Inch in Breadth near the Top, where they are rounded off on one Side like a Scymeter; they are finely sawed on their Edges, and are of a light green Colour; the Stalk rises about a Foot high, and spreads out into many Branches; they are garnished with small Leaves, which end in many Points; the Flowers are produced in small Heads which sit close to the Stalks, coming out at every Division of the Stalks, and at the End of the Branches; these are of a dull white Colour, so make little Appearance. They appear in *June* and *July*, and the Seeds ripen in Autumn.

As this Plant is a Native of hot Countries, it will not thrive in *England*, but in a warm Stove. It is propagated by Seeds, which must be sown on a hot Bed; and when the Plants are fit to remove, they should be each planted in a small Pot, plunged into the Bark Bed, and treated like other tender Plants from the same Country; the 2d Year they will produce Flowers and Seeds, soon after which they commonly decay.

ERYSIMUM. *Lin. Gen. Plant.* 729. *Tourn. Inst.* Hedge Mustard; in *Fréncb*, *Velar*, or *Tortelle*.

The Characters are,

The Empalement is composed of 4 oblong, oval, coloured Leaves;

Leaves; the Flower hath 4 Petals, placed in Form of a Cross; these are oblong, plain, and obtuse; it hath 2 nectarious Glands, situated between the Stamina. It hath 6 Stamina, 4 of which are the Length of the Empalement, the other 2 are a little shorter; they are terminated by single Summits. It hath a very narrow 4 cornered Germen as long as the Stamina, with a short Style crowned by a small permanent Stigma; the Germen becomes a long narrow 4 cornered Pod with 2 Cells, filled with small round Seeds.

The Species are,

1. *ERYSIMUM filiquis spica adpressis*. Hort. Cliff. 337. Hedge Mustard, whose Pods are pressed close to the Spikes. This is the *Erysimum vulgare*. C. B. P. 100. Common Hedge Mustard.

2. *ERYSIMUM foliis lyratis extimo subrotundo*. Flor. Succ. 557. Hedge Mustard with Harp-shaped Leaves, the outer Segment being roundish. This is the *Sisymbrium eruca folio glabro flore*. Tourn. Inst. 226. Winter Cress with a Rocket Leaf and yellow Flower.

3. *ERYSIMUM foliis radicalibus lyratis, caulinis pinnato-sinuatis, floribus laxè spicatis*. Hedge Mustard with lower Leaves shaped like a Harp, those on the Stalks sinuated and winged, and Flowers growing in loose Spikes. This is the *Sisymbrium eruca folio glabro minus & præcocius*. Tourn. Inst. 226. Smaller early Winter Cress with a smooth Rocket Leaf.

4. *ERYSIMUM foliis radicalibus ovatis integerrimis, petiolis decurrentibus, caulinis oblongis dentatis sessilibus*. Hedge Mustard with lower Leaves oval and entire, a winged Foot Stalk, and the Leaves upon the Stalks oblong, indented, and sitting close. This is the *Sisymbrium orientale barbareæ facie, plantaginis folio*. Tourn. Cor. 16. Oriental *Sisymbrium* with the Appearance of Water Cress, and Plantain Leaf.

5. *ERYSIMUM foliis inferioribus pinnato-sinuatis, superioribus oblongis dentatis, floribus solitariis alaribus*. Hedge Mustard whose lower Leaves are winged and sinuated, the upper oblong and indented, and single Flowers proceeding from the Sides of the Stalks. This is the *Sisymbrium minus eruca folio glabro nigro, crasso lucido*. Boerb. Ind. alt. 2. 16. Smaller Winter Cress, with a smooth, dark, thick, shining Rocket Leaf.

6. *ERYSIMUM foliis cordatis*. Hort. Cliff. 338. Hedge Mustard with Heart-shaped Leaves. This is the *Hesperis allium redolens*. Mor. Hist. 2. 252. Dames Violet, smelling like Garlick, commonly called *Alliaria*, Sauce alone, or Jack by the Hedge.

7. *ERYSIMUM foliis integris lanceolatis*. Flor. Lapp. 263. Hedge Mustard with entire Spear-shaped Leaves. This is the *Leucoium besperidis folio*. Tourn. Inst. 221. Gilliflower with a Dames Violet Leaf.

The 1st Sort is used in Medicine; this grows naturally on the Side of Foot Paths, and upon old Walls in most Parts of England, so is never cultivated in Gardens, where, if it was once admitted, it would soon become a troublesome Weed.

The 2d and 3d Sorts also grow naturally on the Banks in most Parts of England; these were formerly eaten in Winter Sallads, before the English Gardens were furnished with better Plants; since when they have been rejected, for they have a rank Smell, and are disagreeable to the Palate.

The 4th and 5th Sorts are not Natives of this Country, but since they have been introduced into some English Gardens, they have propagated by their scattered Seeds in so plentiful a Manner, as to become troublesome Weeds. These have a Resemblance of the common Winter Cress, but the lower Leaves of the 4th Sort are entire, and of an oblong Form; the upper Leaves are oblong and indented, in which this differs.

The 5th Sort hath thicker Leaves, which are of a dark lucid green Colour, and the Flowers come out single from the Wings of the Stalk the whole Length. These Differences are lasting, and do not alter.

The 6th Sort grows naturally on the Sides of Banks in many Parts of England, so is not suffered to have a Place in Gardens. This was formerly eaten as a Sallad Herb by the poorer Sort of People, who gave it the Title of Sauce alone. This hath a rank Smell and Taste of Garlick, and is very biting and hot on the Palate; it is frequently prescribed in Medicine.

The 7th Sort is sometimes found growing naturally on old Walls in some Parts of England, particularly at Cambridge and Ely, at both which Places I have observed it. This hath pretty long hairy soft Leaves at the Root; the Stalks rise near a Foot high, their upper Part being garnished with small greenish white Flowers in loose Spikes; these are succeeded by long compressed Pods, which hang downward. It flowers in May, and the Seeds ripen in July and August; the Roots will abide several Years in a dry lean Soil, or if they grow on a Wall, for in rich Land they soon decay.

The other Sorts are sometimes kept in Botanick Gardens for Variety; they are biennial Plants, which perish after they have perfected Seeds. These may be propagated by sowing their Seeds in Autumn, in the Places where they are to remain, and require no other Culture but to thin them, and keep them clear from Weeds.

ERYTHRINA. Lin. Gen. Plant. 762. *Corallodendron*. Tourn. Inst. R. H. 661. Tab. 446. Coral Tree.

The Characters are;

The Flower hath a tubulous Empalement of one Leaf, which is entire and indented at the Brim. The Flower is of the Butterfly Kind, composed of 5 Petals; the Standard is Spear-shaped, and deflexed on the Styles; it is very long, and rises upward; the 2 Wings are scarce longer than the Empalement, and are oval; the Keel is composed of 2 Petals which are no longer than the Wings, and are indented at the Top; it hath 10 Stamina which are joined below, a little curved, about half as long as the Standard, and are unequal in their Length, terminated by Arrow-pointed Summits; it hath an Awl-shaped Germen with a Foot Stalk, narrowed at the Style, which is the Length of the Stamina, terminated by a single Stigma. The Germen becomes a long swelling Pod ending in an acute Point, having one Cell, filled with Kidney-shaped Seeds.

The Species are,

1. *ERYTHRINA foliis ternatis, caule simplicissimo inermi*. Hort. Cliff. *Erythrina* with trifoliate Leaves, and a single smooth Stalk. This is the *Corallodendron humile, spica florum longissima, radice crassissima*. Catesb. Low Coral Tree with a very long Spike of Flowers and thick Root, commonly called the *Carolina Coral Tree*.

2. *ERYTHRINA inermis, foliis ternatis, caule arboreo*. Smooth

Smooth *Erythrina* with trifoliate Leaves, and a Tree like Stalk. This is the *Coral arbor Americana*. Hort. Amst. 1. p. 211. Smooth American Coral Tree.

3. *ERYTHRINA foliis ternatis, caule arboreo aculeato*. Hort. Cliff. 354. *Erythrina* with trifoliate Leaves, and a Tree-like prickly Stalk. *Corallodendron triphyllum Americanum, spinosum, flore ruberrimo*. Tourn. Prickly three leaved American Coral Tree, with a very red Flower.

4. *ERYTHRINA foliis ternatis hastatis, caule fruticoso aculeato*. *Erythrina* with trifoliate Leaves which are Spear-pointed, and a prickly shrubby Stalk. This is the *Corallodendron triphyllum Americanum, minus spinis & seminibus nigricantibus*. Tourn. Inst. Smaller three leaved American Coral Tree, with blacker Spines and Seeds.

5. *ERYTHRINA foliis ternatis acutis, caule arboreo aculeato, floribus spicatis longissimis*. *Erythrina* with trifoliate acute-pointed Leaves, a prickly Tree-like Stalk, and very long Spikes of Flowers. This is the *Corallodendron triphyllum Americanum, foliis mucronatis, seminibus coccineis*. Houst. Mss. Three leaved American Coral Tree with acute pointed Leaves and scarlet Seeds.

6. *ERYTHRINA foliis ternatis acutis, caule fruticoso inermiti, corollis longioribus clausis*. *Erythrina* with acute trifoliate Leaves, a shrubby unarmed Stalk, and longer Flowers which are closed. *Coral arbor non spinosa, flore longiore & magis clauso*. Sloan. Cat. Coral Tree without Spines, and having a longer closer Flower.

The 1st Sort grows naturally in *South Carolina*, from whence Mr. *Catesby* sent the Seeds in the Year 1724, and many of the Plants were then raised in several curious Gardens. This hath a very large woody Root; which seldom rises more than a Foot high, from which comes out fresh Shoots every Spring; these grow about two Feet high, their lower Part being garnished with trifoliate Leaves of a deep green Colour, and shaped like the Point of an Arrow; the upper Part of the Stalks are terminated by a long Spike of scarlet Flowers, composed of 5 Petals, the upper Petal being much longer than the other, so that at a small Distance the Flowers appear to have but one Petal. After the Flowers are past, the Germen turns to a taper Pod; 5 or 6 Inches long, swelling in every Part where the Seeds are lodged, opening in one Cell, containing 5 or 6 Kidney-shaped scarlet Seeds. These Plants flower in *England*, but they never produce Seeds here.

The 2d Sort hath a thick woody Stem, which rises about 10 or 12 Feet high in this Country, but in its native Country grows to twice that Height sending out many strong irregular Branches, covered with a brown Bark, and garnished with trifoliate Leaves standing on long Foot Stalks, the middle Lobe which terminates the Leaf, being much larger than the other two; they are all Heart-shaped, smooth, and of a deep green Colour; the Flowers come out at the End of the Branches, in short thick close Spikes; they are of a deep-scarlet Colour, and make a fine Appearance. These commonly are in Beauty in *May* and *June*, but are not succeeded by Pods here; in *America*, where the Trees grow naturally, they have thick swelling crooked Pods, which contain large Kidney-shaped Seeds, of a reddish purple Colour. The Leaves of this Tree decay in the Spring and fall off, so that in Summer they appear to have no Life, but in Autumn it puts out new Leaves, which

continue green all the Winter. The Flowers do not appear till the Leaves drop, so that the Branches are often naked when the Flowers are out.

The 3d Sort chiefly differs from the 2d, in having its Trunk, Branches, and the Foot Stalks of the Leaves, armed with short crooked Spines, the Leaves and Flowers being very like those of the second Sort.

The 4th Sort hath shrubby Stalks, which divide into Branches, and never rise above 8 or 9 Feet high; these are armed in every Part with strong crooked black Spines, the Leaves are smaller than those of the two last Sorts, and have a nearer Resemblance to those of the first; the Foot Stalks of the Leaves are armed with the same Sort of Spines, and the Mid-rib of the Leaves have also some which are smaller and not so black; the Flowers are of a paler scarlet, and grow in looser Spikes. The Seeds are as large as those of the second Sort, but are of a dark purple Colour.

The Seeds of the 5th Sort were first sent me from *La Vera Cruz*, where the Plants grow naturally; and since I have received Seeds of the same Sort from the *Cape of Good Hope*, so that it is a Native of both Countries. The Seeds of this are not half so large as those of the 2d or 3d Sorts, and are of a bright scarlet Colour; the Leaves are also much smaller, and have long acute Points; the Branches are very closely armed with crooked greenish Spines, as are also the Ribs and Foot Stalks of the Leaves. The Flowers grow in very long close Spikes, and are of a beautiful scarlet Colour.

I have raised a Variety of this with paler Flowers and Seeds, and the Plants were less thorny; but I doubt of its being a distinct Species.

The 6th Sort grows in *Jamaica*, and some of the other Islands in *America*, from whence I received the Seeds. The Pods are longer, and not more than half so thick as those of the 2d Sort; the Seeds are of a bright scarlet Colour, they are longer and slenderer than those of the other Sorts; the Leaves are small and acute pointed; and the Stalks smooth and without Spines; this doth not grow very large, but shoots out into Branches at a little Distance from the Ground, which grow erect, so form a bushy Shrub. The Flowers come out at the End of the Branches in short Spikes; the Standard of the Flower is long, and the Sides turn down over the Wings, which are also longer than those of the other Species, and the whole Flower is more closed.

I have also received Specimens of a Variety of the 3d Sort from the Island of *Barbuda*, with very short Flowers and Pods; they came by the Title of Bean Tree, which is the common Appellation given to these Trees in *America*; but the Flowers were separated from the Stalks, so I can give no Account whether they grow in long or short Spikes; but the Stamina of these are much longer than the Petals, in which it differs from all the other; the Pods are very short, crooked, and rather thicker than those of the 3d Sort; the Leaves have the same Appearance, and are armed with Spines, as are also the Stalks and Branches, but the Plants have not as yet produced Flowers here.

Two Years ago I received a few very small Seeds of a Coral Tree from the *Cape of Good Hope*, which were of a bright scarlet Colour; the Plants have no Spines, the Leaves are much larger than the other Sorts, their Stems

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Stems are strong, and have the Appearance of growing to large Trees; but as they are young, so there is no determining how they may differ from the other Species.

There are two other Sorts of Coral Tree mentioned by Sir Hans Sloane, in his *History of Jamaica*: One of which is by its Characters a *Sophora*, under which Genus we shall place it; and the other will be put under *Robinia*, to which Genus it properly belongs.

These Plants when they produce their Flowers, are some of the greatest Ornaments to the Stoves we yet know, for they are produced in large Spikes, of a beautiful scarlet, and make a fine Appearance; but they seldom flower here, or in any of the Northern Parts of Europe; yet in the Countries where they naturally grow, they produce Flowers in great Plenty every Year, so that it is very common there to see most of their Branches terminated by large Spikes of Flowers, when they have no Leaves on them; and the first Sort, which grows in *Carolina*, is equally productive of Flowers there, though here they do not flower oftener than once in 6 or 7 Years, and the other Sorts not so frequent. I have tried by various Methods to get them to flower, some I have treated hardily, by exposing them to the open Air in Summer, and in the Winter kept them in a very moderate Temperature of Warmth; others I have kept plunged all the Year in the Tan Bed of the Stove, and some have remained in a dry Stove all the Year, where in warm Weather they had a large Share of Air admitted to them, and in Winter the Air was kept to the temperate Point. In this last Place the Plants have succeeded best, yet with this Treatment they seldom flower; and this is the general Complaint, not only in *England*, but also in *Holland* and *France*.

The 1st Sort may be kept through the Winter in a warm Green-house, but the Plants to kept rarely flower; and the two Sorts which I received from the *Cape of Good Hope*, have lived through the Winter in a warm Glass Case without Fire; but these have not made so good Progress, as those kept in a temperate Warmth; so that in this Country, it is much the best Method of treating these Plants, especially while they are young.

These Plants are best propagated by Seeds, when they can be procured from the Countries where they naturally grow, for they do not produce any here. The Seeds should be sown in small Pots and plunged into a moderate hot Bed, where, if the Seeds are good, the Plants will come up in a Month or five Weeks; when they are 2 Inches high, they should be carefully shaken out of the Pots, and each planted in a small Pot filled with light Earth, and plunged into a moderate hot Bed of Tanners Bark, where they must be shaded from the Sun till they have taken new Root; then a large Share of Air should be admitted to them at all Times when the Weather is warm, to prevent their being drawn up weak; and as the Plants increase in Strength, they must have a larger Share of Air. They must be frequently refreshed with Water, but not in great Plenty, for too much Moisture will rot the Fibres of their Roots. In Autumn the Plants should be removed into the Stove, and for the 2 or 3 first Winters while they are young, they will require more Warmth than when they have acquired more Strength. During the

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Time the Leaves continue in Vigour, the Plants will require to have Water 2 or 3 Times a Week; but when they are destitute of Leaves, it must be sparingly given, for Moisture then is very hurtful to them. As the Plants grow in Strength, they may be more hardily treated, and by managing them differently, there will be a greater Chance of their flowering. The 3d Sort is frequently planted in the Gardens near *Lisbon*, where they annually flower and ripen their Seeds, which have been brought me by Persons who gathered the Pods from the Trees.

These Plants may also be propagated by Cuttings, which, if planted in Pots during the Summer Months, and plunged into a hot Bed will take Root, but the seedling Plants are best.

ERYTHRONIUM. *Lin. Gen. Plant. 375. Dens canis. Tourn. Dog's Tooth, or Dog's Tooth Violet.*

The Characters are,

The Flower has no Empalement, it is Bell-shaped, and composed of 6 oblong Petals, which spread open to their Base. It hath 6 Stamina joined to the Style, terminated by oblong, erect, quadrangular Summits. In the Center is situated an oblong, obtuse, 3 cornered Germen, supporting a single Style which is longer than the Stamina, crowned by a triple, obtuse, spreading Style. The Germen becomes an oblong obtuse Capsule, with 3 Cells filled with flat Seeds.

The Species are,

1. **ERYTHRONIUM foliis ovatis.** *Erythronium* with oval Leaves. This is the *Dens canis latiore rotundioreque folio, flore ex purpure rubente.* C. B. P. 87. Dog's Tooth Violet with a broader and rounder Leaf, and a purple red Flower.

2. **ERYTHRONIUM foliis lanceolatis.** *Erythronium* with Spear-shaped Leaves. This is the *Dens canis angustiore longioreque folio, flore ex albo purpurascens.* C. B. P. 87. Dog's Tooth Violet, with a longer and narrower Leaf, and a purplish white Flower.

These are the only distinct Species which I have seen, but there are several Varieties of them, preserved in curious Gardens. Of the 1st Sort there is a white Flower, which is pretty common in the Gardens; another with a pale purple, and a 3d with yellow Flowers, which are rare in *England*: And of the 2d Sort there is one with a white, and another with a soft red Flower, both which are now very rare in the Gardens.

The 1st Sort sends out 2 oval Leaves, joined at their Base; they are 3 Inches long, and one and a Half broad in the Middle, gradually lessening toward the End; these at first embrace each other inclosing the Flower, but afterward they spread flat upon the Ground; they are spotted with purple and white Spots all over their Surface; between these rises a single naked Stalk about 4 Inches high, smooth and of a purple Colour; this sustains one Flower, composed of 6 Spear-shaped Petals, which in this are purple, but in some they are white; the Flower hangs downward, and the Petals reflex and spread open to their Base. In the Center is situated the oblong 3 cornered Germen supporting a single Style which is longer than the Stamina, and crowned by a triple Stigma; the purple Stamina stand close about the Style, and the Stigma stands farther out. This flowers early in *April*, but does not produce Seeds in *England*.

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The Root is white, oblong, fleshy, and shaped like a Tooth, from whence it had the Title of Dog's Tooth.

The 2d Sort differs from the first in the Shape of its Leaves, which are longer and narrower, and the Flowers are a little larger but not so well coloured. They grow naturally in *Hungary*, and some Parts of *Italy*.

They are propagated by Offsets from their Roots, which they do not send out very plentifully, so are not so commonly seen in Gardens, as most other Flowers of the same Season: They love a shady Situation and a gentle loamy Soil, but should not be too often removed. They may be transplanted any Time after the Beginning of *June*, when their Leaves will be quite decayed, till the Middle of *September*; but the Roots should not be kept very long out of the Ground, for if they shrink, it will often cause them to rot. The Roots of these Flowers should not be planted scattering in the Borders of the Flower Garden, but in Patches near each other, where they make a good Appearance.

ESCHYNOMENE. See *Æschynomena*.

ESCHYNOMENOUS, ÆSCHYNOMENOUS PLANTS [*αἰσχύνωμος*, of *αἰσχύνωμι* Gr. to be ashamed,] the sensitive Plants; which, when touched, shrink in, or let their Leaves fall down.

ESCULENT PLANTS [of *Esculentus*, Lat. eatable,] such Plants, or Roots of them, as may be eaten; as Beets, Carrots, *Jerusalem* Artichokes, Leeks, Onions, Parsneps, Potatoes, Radishes, &c.

ESPALIERS, are either Rows of Trees planted about a whole Garden or Plantation, or in Hedges, so as to inclose Quarters or separate Parts of a Garden; which are trained up flat in a close Hedge, for the Defence of tender Plants against the Violence and Injury of Wind and Weather. See *Hedges*.

The most commonly received Notion of Espaliers are Hedges of Fruit Trees, which are trained up regularly to a Lattice of Wood Work, formed of Ash Poles, or square long Timbers cut out of Fir, &c. and it is of this Sort of Espalier that I shall treat in this Place.

Espaliers of Fruit Trees are commonly planted to surround the Quarters of a Kitchen Garden, for which Purpose they are of admirable Use and Beauty; for by laying out the Walks of this Garden regularly, which are bounded on each Side by these Hedges, when they are handsomely managed, they have a wonderful Effect in sheltering the Kitchen Plants in the Quarters, and also screening them from the Sight of Persons in the Walks; so that a Kitchen Garden well laid out in this Manner, and properly managed, will be equal to the finest regular Parterre for Beauty.

The Trees chiefly planted for Espaliers are Apples, Pears, and some Plums, but the two former are mostly used: Some plant Espaliers of Apples grafted upon Paradise Stocks, but these being of humble Growth and a short Duration, are not so proper for this Purpose, unless for very small Gardens; therefore I should rather advise the having them upon Crab Stocks, or (if in smaller Gardens, where the Trees cannot be allowed to grow so high) upon what the Gardeners call the *Dutch* Stock; which will cause them to bear sooner, and prevent their growing too luxuriant, and these will continue many Years in Vigour.

In choosing the Trees for an Espalier, endeavour as

near as possible, to plant the several Sorts which are nearly of the same Growth in one Line, that the Espalier may be the more regular, and of an equal Height, which greatly adds to their Beauty; for if you plant Trees which shoot very unequally in the same Line, it will be impossible to make the Espalier regular: Besides, the Distance of the Trees must be in Proportion to their Growth; for those of a large Growth, should be planted 30 or 35 Feet asunder; whereas those of smaller Growth, need not be above 25 Feet Distance from each other.

The Width of the Walks and Borders between these Espaliers should (in a large Garden) be 14 or 16 Feet at least; and if the Trees are designed to be carried up pretty high, the Distance should be greater, that each Side may receive the Advantage of the Sun and Air, which is absolutely necessary, if you would have the Fruit well tasted. If your Ground is so situated, that you are at full Liberty which Way to make the Espaliers, I would advise the placing the Lines from the East a little inclining to the South, and toward the West a little inclining to the North, that the Sun may shine between the Rows in the Morning and Evening when it is low; for in the Middle of the Day, when the Sun is advanced far above the Horizon, it will shine over the Tops of the Espaliers, and reach the Surface of the Earth about their Roots, which is a Matter of more Consequence than many People are aware of.

The Sorts of Apples proper for Espaliers, are the *Golden Pippin*, *Nonpareil*, *Rennette Grise*, *Aromatick Pippin*, *Holland Pippin*, *French Pippin*, *Wheeler's Russet*, *Pile's Russet*, with some others. The Season for planting, and Method of pruning and trailing these Trees, you will see under the Articles of *Apples* and *Pruning*.

The Sorts of Pears proper for an Espalier, are chiefly the Summer and Autumn Fruits, for some of the Winter Pears seldom succeed well in an Espalier. These Trees, if designed for a strong moist Soil, should be upon Quince Stocks; but if for a dry Soil, upon Free Stocks. Their Distance of planting must also be regulated by the Growth of the Trees, which are more unequal in Pears than Apples, and should therefore be more carefully examined before they are planted. Pears upon Free Stocks, should never be less than 30 Feet asunder for moderate growing Trees; but for vigorous Shooters, the Space of 40 Feet is little enough, especially if the Soil be strong, in which Case they should be planted at a greater Distance. The Sorts of Pears I would recommend for an Espalier, are the *Fargonell*, *Blanquette*, *Poire sans Peau*, *Summer Boncretien*, *Hamden's Bergamot*, *Poire du Prince*, *Autumn Bergamot*, *L'ambrette*, *Gros Rousselet*, *Chaumontelle*, *Beurre du Roy*, *Le Marquis*, *Cressane*, with many others of less Note; always remembering, that those Pears which are of the melting Kind, will do better in Espalier than the breaking Pears, which seldom ripen well on Espalier; as also that many Sorts of Pears will ripen well on an Espalier in a warm Soil and Situation, which require a Wall in other Places; you should also be careful of the Stocks these are grafted on, for if the breaking Pears are grafted upon Quince Stocks, the Fruit will be stony, but the melting Pears will be improved

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by them. For the Method of planting, see the Article *Pear*; and for pruning and managing, see *Pruning*.

I shall now give Directions for making the Espalier, to which the Trees are to be trained; but this should not be done until the 3d Year after the Trees are planted, for while they are young, it will be sufficient to drive a few short Stakes into the Ground on each Side of the Trees, to which the Branches should be fastened in a horizontal Position, as they are produced, in order to train them properly for the Espalier; which Stakes may be placed nearer, or at a farther Distance, according as the Shoots produced may require, and these will be sufficient for the 3 first Years; for should you frame the Espalier the 1st Year the Trees are planted, the Stakes would rot before the Espalier is covered. The cheapest Method to make these Espaliers is with Ash Poles, of which you should have two Sorts; one of the largest Size, which contains 13 Poles in a Bundle, and the other Size those of half a Hundred. The first or largest Size Poles, should be cut about 7 Feet and a Half long; these are intended for upright Stakes, and must be sharpened at the largest End, that they may, with more Ease, be driven into the Ground; these should be placed at a Foot Distance from each other in a direct Line, and of an equal Height, about 6 Feet above Ground; then you should nail a Row of strait slender Poles along upon the Tops of the upright Stakes, which will keep them exactly even, and continue to cross the Stakes with the smaller Poles, and also with the Tops which were cut off from the the larger Stakes, at about nine Inches Distance, Row from Row, from the Top to the Bottom of the Stakes. These Rows of Poles should be fastened with Wire to the Stakes, which if painted or oiled will last a long Time, and the largest End of the Poles should be cut flat and nailed to the upright Stakes, which will secure the Espalier almost as long as the Poles will endure; whereas if your Fastening is not strong, the Poles will be continually displaced with every strong Wind.

When your Espalier is thus framed, you must fasten the Branches of the Trees thereto, either with small Osier Twigs, Rope Yarn, or some such binding, observing to train them in a horizontal Position, and at equal Distances; being careful not to cross any of the Branches, nor to lay them in too thick. The Distance which should be allowed for the Branches of Pears and Apples, must be proportioned to the Size of the Fruit; such of them whose Fruit is large, as the Summer *Boncretin*, Monsieur *John*, and *Beurre du Roy* Pears, and the *Rennet Grise*, *Holland Pippin*, *French Pippin*, and other large Apples, should have their Branches 6 or 8 Inches Distance at least; and to those of lesser Growth, 4 or 5 Inches will be sufficient. For farther Directions, I refer to the Articles of the several Fruits; as also that of *Pruning*, where these Particulars are sufficiently explained.

But besides this Sort of Espalier made with Ash Poles, there is another Sort that is by many People preferred; which is framed with square Timbers cut to any Size, according to the Strength thereof, or the Expence the Owner is willing to go to. These, though they appear more lightly, when well fixed and painted, are not of longer Duration than one of the former, provided it is

well made, and the Poles are strong which are set upright; nor will they answer the Purpose better, though they are vastly more expensive, for the greatest Beauty consists in disposing of the Branches, which, especially in Summer, when the Leaves are on, will entirely hide from Sight the Frame of the Espalier; therefore all Expence in erecting these is needless, farther than making Provision to secure the Branches in a regular Order.

Fruit Trees thus planted, and well managed, are much preferable to those trained up in any other Figure, on several Accounts; first, these take up very little Room in a Garden, so do not hurt the Plants which grow in the Quarters; 2dly, the Fruit upon these are better tasted than those which grow on Dwarfs, the Sun and Air having freer Access to every Part of the Tree, whereby the Dampness arising from the Ground is sooner dissipated, which is of singular Advantage to Fruit Trees; and as the Trees against an Espalier are kept low, and the Branches being fastened to the Espalier, the Fruit will not be blown so soon by the Wind, so that upon the whole, Espaliers must be allowed to be of great Use and Beauty.

EVER-GREEN THORN. See *Pyracantha*.

EVERLASTING PEA. See *Lathyrus*.

EUONYMUS. *Lin. Gen. Plant.* 240. *Tourn. Inst. R. H.* 617. *Tab.* 388. The Spindle Tree, or Prickwood; in *French*, *Fusain*.

The Characters are,

It hath a short Empalement to the Flower, of one Leaf, divided into 4 or 5 Parts. The Flower hath 4 or 5 oval Petals, which spread open. It hath 4 or 5 short Stamina, joined at their Base to the Germen, and terminated by twin Summits. In the Center is situated a large oval Germen, supporting a short Style, crowned by an obtuse Stigma. The Germen becomes a succulent four or five-cornered coloured Capsule, having so many Cells as Angles, each containing one oval Seed.

The Species are,

1. *EUONYMUS foliis lanceolatis, floribus tetrandriis, fructu tetragono.* Spindle Tree with Spear-shaped Leaves, Flowers having four Stamina, and quadrangular Fruit. This is the *Euonymus vulgaris, granis rubentibus*. C. B. The common Spindle Tree.

2. *EUONYMUS foliis ovato-lanceolatis, floribus pentandriis, fructu pentagono, pedunculis longissimis.* Spindle Tree with oval Spear-shaped Leaves, Flowers having five Stamina, a five-cornered Fruit, and very long Foot Stalks. This is the *Euonymus latifolius*. C. B. Broad-leaved Spindle Tree.

3. *EUONYMUS floribus omnibus quinquefidis.* *Lin. Sp. Plant.* 197. Spindle Tree whose Flowers are all divided into five Points. This is the *Euonymus Virginianus, pyracanthæ foliis, sempervirens, capsula verrucarum instar asperata rubente.* *Pluk. Phyt.* 115. f. 5. *Virginian Evergreen* Spindle Tree with rough warted red Seed Vessels.

4. *EUONYMUS foliis pinnatis, fructu racemoso trigono.* Spindle Tree with winged Leaves, and three cornered Fruit growing in Bunches. This is the *Euonymus caudice non ramoso, folio alato, fructu rotundo tripyreno.* *Sloan. Cat. Jam.* 171. Spindle Tree with an unbranching Stalk, a winged Leaf, and a round Fruit, having 3 Seeds.

The 1st Sort grows naturally in England. It is very common in Hedges, and is sometimes found growing

in Woods. This, when growing in Hedges, is seldom seen of any considerable Size, but rather appears like a Shrub; but if planted single, and trained up like other Trees, will have a strong woody Stem, and rise more than 20 Feet high, dividing into many Branches, garnished with Spear-shaped Leaves, about 3 Inches long, and one Inch and a Quarter broad in the Middle, gradually diminishing to both Ends; they are entire, of a deep green Colour, and are placed opposite. The Flowers come out in small Bunches from the Side of the Stalks, standing on slender Foot Stalks; they are composed of 4 whitish Petals, which are expanded in Form of a Cross. The Empalement is divided into 4 Parts. The Flowers have 4 Stamina, and the Fruit is four-cornered, and opens into 4 Cells. This Tree flowers the latter Part of May and the Beginning of June, and the Fruit ripens in October, at which Time the Seed Vessels spread open, and expose the Seeds, which are of a beautiful red Colour, so that when the Branches are well stored with them the Trees make a good Appearance at that Season, when growing among other Sorts. The Wood of this Tree is used by the musical Instrument Makers for toothing of Organs and Virginal Keys; the Branches are cut into Tooth-pickers, and for making of Skewers, and Spindles are made of the Wood, from whence the Tree was titled Spindle Tree; but in some Countries it is called Dogwood.

The 2d Sort grows naturally in *Austria* and *Hungary*; this was very seldom seen in *England* till of late Years, since I procured it from *France*, and from the Seeds of those Plants great Numbers have been since raised, so it is now common in several of the Nurseries near *London*; this rises with a stronger Stem than the first, and grows to a larger Size. The Leaves are oval and Spear-shaped, about 4 Inches long, and 2 broad in the Middle, of a light green Colour, and entire; they are placed opposite on the Branches, with short Foot Stalks. The Flowers come out from the Side of the Branches, on very slender Foot Stalks, which are 2 Inches and a Half long; these branch out into a loose Bunch, so that the Flowers stand upon separate Foot Stalks. The Flowers have 5 Petals, which at first are white, but afterward change to a purple Colour; the Empalement of the Flower is divided into 5 Parts. It hath 5 Stamina, and the Fruit is five cornered, and the Fruit is much larger than that of the common Sort, and the Foot Stalks being weak, the Fruit always hang down.

The 3d Sort grows naturally in *Virginia*, *Carolina*, and other Parts of *North America*; this rises with a shrubby Stalk 8 or 10 Feet high, dividing into many Branches, which come out opposite at every Joint; these are garnished with Spear-shaped Leaves, which are 2 Inches long, and about 3 Quarters broad in the Middle, ending in acute Points; they are placed opposite, and continue all the Year. The Flowers are produced at the End of the Branches, and also from the Sides, in small Clusters, which are succeeded by round Capsules, closely armed with rough Protuberances. This flowers in *July*, but seldom produces Fruit in *England*.

As this is an evergreen Shrub, it merits a Place in every curious Garden, and particularly in all Plantations of ever-green Trees and Shrubs; there is a Variety of this with variegated Leaves, which is preserved in the Nursery Gardens.

The 4th Sort grows naturally in *Jamaica*, and other Islands in the *West-Indies*; this rises with an upright woody Stalk, 10 or 12 Feet high; at the Top it divide, into 2 or 3 short Branches, garnished by winged Leaves composed of six or seven Pair of small Leaves (or Lobes) about two Inches long, and one Inch broad; these Leaves come out without Order, standing on long Foot Stalks. The Flowers come out in Clusters from the Side of the Branches, toward their End; these are succeeded by roundish Capsules, having a thick brown Cover, which open in three Cells, each containing a single hard Seed.

The two first Sorts may be propagated by Seeds, or Layers, if by Seeds, they should be sown in Autumn, soon after they are ripe; then the Plants will come up the Spring following, but if the Seeds are not sown till Spring, the Plants will not appear till the following Spring, whereby a whole Year is lost. They should be sown on a shady Border where they will succeed better than when more exposed to the Sun. When the Plants come up, they require no other Care but to keep them clean from Weeds till the following Autumn, when, as soon as their Leaves decay, they should be taken up and transplanted into a Nursery, in Rows 2 Feet distant, and one Foot asunder in the Rows; in this Place they may remain 2 Years, and then may be removed to the Places where they are to remain.

When these are propagated by Layers, the young Shoots should be laid down in Autumn, and if the Joint which is laid deepest into the Ground is slit, as practised for Carnations, it will cause them to put out Roots much sooner than they otherwise would do; these Layers will be sufficiently rooted in one Year to bear transplanting, when they should be taken from the old Plants and treated as the Seedlings. The Cuttings of these Sorts, planted in a shady Border, will take Root, but they should be planted in Autumn, as soon as their Leaves begin to fall; they should be the Shoots of the same Year, with a Knot of the former Year at Bottom.

EUPATORIOPHALACRON. See Verbesina.

EUPATORIUM. *Lin. Gen. Plant.* 842. *Tourn. Infl.* Hemp Agrimony; in *French*, Eupatoire.

The Characters are,

It hath a compound Flower, composed of several hermaphrodite Florets, Funnel-shaped, and cut into 5 Parts at the Brim, which spread open; these are included in one scaly Empalement, whose Scales are narrow, erect, and unequal. The Florets have each 5 short hairy Stamina, terminated by cylindrical Summits. In the Bottom is situated a small Germina, supporting a long slender Style, which is bifid, and crowned by a narrow Stigma. The Germina becomes an oblong Seed, crowned with Down, sitting in the Empalement.

The Species are,

1. EUPATORIUM foliis digitatis. *Hort. Cliff.* 396. Eupatorium with fingered Leaves. This is the Eupatorium cannabinum. *C. B.* 320. Common Hemp Agrimony.

2. EUPATORIUM foliis lanceolato-ovatis, serratis, petiolatis, caule erecto. *H. C.* Eupatorium with Spear-shaped oval Leaves, sawed, with Foot Stalks, and an upright Stalk. This is the Eupatorium Novae Angliae, urticae foliis,

foliis, floribus purpurascens, maculato caule. H. L. New-England Hemp Agrimony with Nettle Leaves, purplish Flowers, and spotted Stalks.

3. *EUPATORIUM foliis subverticillatis, lanceolatis serratis petiolatis rugosis. Lin. Sp. Pl. 838. Eupatorium with Leaves placed in Whorls, Spear-shaped, sawed, rough, and have Foot Stalks. This is the Eupatorium folio oblongo rugoso, caule purpurascens. Tourn. Canada Hemp Agrimony with a long rough Leaf, and purplish Stalk.*

4. *EUPATORIUM caule volubili, foliis cordatis dentatis acutis. Hort. Cliff. 396. Eupatorium with a twining Stalk and Heart-shaped Leaves, which are sharply indented. This is the Eupatorium Americanum scandens, bastato magis acuminato folio. Vaill. Mem. 1719. Climbing American Hemp Agrimony, with a Spear-like sharp-pointed Leaf.*

5. *EUPATORIUM foliis sessilibus distinctis subrotundis cordatis. Lin. Sp. Plant. 837. Eupatorium with roundish Heart-shaped Leaves sitting close to the Stalks and are distinct. This is the Eupatorium Americanum, foliis rotundioribus absque pediculis. Vaill. Mem. 1719. American Hemp Agrimony with round Leaves, having no Foot Stalks.*

6. *EUPATORIUM foliis oblongo-cordatis, floribus paniculatis, caule fruticoso scandente. Eupatorium with oblong Heart-shaped Leaves, paniculated Flowers, and a climbing shrubby Stalk. This is the Eupatorium scandens foliis subrotundis lucidis, floribus spicatis albis. Houst. Climbing Hemp Agrimony with roundish shining Leaves, and white Flowers growing in Spikes.*

7. *EUPATORIUM foliis ovatis, obtusè serratis petiolatis trinerviis, calycibus simplicibus. Lin. Sp. Plant. 839. Eupatorium with oval, obtuse, sawed, three veined Leaves, having Foot Stalks, and single Empalements to the Flowers. Eupatorium Americanum, teucrii folio, flore niveo. Vaill. Mem. Acad. Scien. American Hemp Agrimony, with a Tree Germander Leaf, and a white Flower.*

8. *EUPATORIUM foliis connatis tomentosis. Hort. Cliff. 396. Eupatorium with woolly Leaves joined at their Base. This is the Eupatorium Virginianum, salviae foliis longissimis acuminatis, perfoliatum. Pluk. Alm. Virginian perfoliate Hemp Agrimony with long Sage-like Leaves, closely surrounding the Stalk.*

9. *EUPATORIUM foliis oblongis, obtusis, crenatis, glabris, calycibus simplicibus. Eupatorium with oblong, obtuse, smooth, crenated Leaves, and single Empalements to the Flowers. This is the Eupatorium betonicae folio glabro & carnoso, flore caeruleo. Houst. Hemp Agrimony with a fleshy smooth Betony Leaf, and a blue Flower.*

10. *EUPATORIUM foliis cordatis serratis caule erecto arborco. Eupatorium with Heart-shaped sawed Leaves, and an upright Tree-like Stalk. This is the Eupatorium Americanum arborescens, mori folio, floribus albicantibus. Tree-like American Hemp Agrimony with a Mulberry Leaf, and white Flowers.*

11. *EUPATORIUM foliis ovatis petiolatis integris, caule fruticoso ramoso, calycibus simplicibus. Eupatorium with oval entire Leaves, having Foot Stalks, a branching shrubby Stalk, and single Empalements to the Flowers. This is the Eupatorium Americanum frutescens, balsaminae luteae foliis, nigris maculis punctatis. Houst. American*

shrubby Hemp Agrimony with yellow Balsamine Leaves, spotted with black.

12. *EUPATORIUM foliis lanceolato-linearibus trinerviis integerrimis. Lin. Sp. Plant. 836. Eupatorium with narrow, Spear-shaped, entire Leaves, having three Nerves. This is the Eupatorium Virginianum, folio angusto, floribus albis. Hort. Eltb. 141. Tab. 115. f. 140. Virginia Hemp Agrimony with a narrow Leaf, and white Flowers.*

13. *EUPATORIUM foliis lanceolato-linearibus acutis, superne serratis, caule ramoso. Hemp Agrimony with narrow, Spear-shaped, pointed Leaves, sawed on their upper Part, and a branching Stalk.*

14. *EUPATORIUM foliis cordatis acutis, dentatis, trinerviis caule fruticoso ramoso. Eupatorium with pointed, Heart-shaped, sawed Leaves, having three Veins, and a branching shrubby Stalk. This is the Conyza fruticosa, folio bastato, flore pallide purpureo. Sloan. Cat. Jam. 124. Shrubby Fleabane with a Spear-shaped Leaf, and a pale purple Flower.*

15. *EUPATORIUM foliis cordatis rugosis crenatis, caule paniculato. Eupatorium with rough, Heart-shaped, crenated Leaves, and a paniculated Stalk. This is the Conyza Salviae foliis conjugatis, floribus spicatis rubentibus. Houst. Mss. Fleabane with Sage Leaves placed opposite, and red Flowers growing in Spikes.*

16. *EUPATORIUM foliis cordatis acuminatis, caule volubili, floribus spicatis racemosis. Eupatorium with Heart-shaped pointed Leaves, a twining Stalk, and branching spiked Flowers. This is the Eupatorium Americanum, scandens, folio bastato glabro, floribus spicatis. Houst. Mss. Climbing American Hemp Agrimony with a smooth Spear-shaped Leaf, and spiked Flowers.*

17. *EUPATORIUM foliis subverticillatis, lanceolato-ovatis serratis petiolatis rugosis. Lin. Sp. Plant. 838. Hemp Agrimony with oval, Spear-shaped, rough, sawed Leaves, having Foot Stalks, and standing in Whorls on the lower Part of the Stalk.*

18. *EUPATORIUM foliis verticillatis, lanceolatis, acutis, serratis, inferne rugosis. Eupatorium with pointed Spear-shaped Leaves, sawed on their Edges, rough on their under Side, and stand in Whorls round the Stalks. This is the Eupatorium folio oblongo, rugoso, ampliori, caule virescente. Tourn. Inf. Hemp Agrimony with a large, oblong rough Leaf, and a green Stalk.*

19. *EUPATORIUM foliis cordato-ovatis, obtusè serratis petiolatis, calycibus multifloris. Lin. Sp. Plant. 838. Eupatorium with Heart-shaped oval Leaves, obtusely sawed, having Foot Stalks, and many Flowers to the Empalements. This is the Eupatorium scorodoniae folio, flore caeruleo. Hort. Eltb. 140. Tab. 114. Hemp Agrimony with a Wood Sage Leaf, and a blue Flower.*

This grows naturally in Carolina, from whence the late Dr. Dale sent me the Seeds; these Plants flowered very finely the Year after they were raised, but never have flowered since, for the Roots creep greatly in the Ground, but never send up any Stalks.

The 1st Sort grows naturally by the Side of Rivers and Ditches in England, and is the only Species of this Genus, which is known to grow naturally in Europe; This is esteemed a very good vulnerary Herb, so stands in the List of medicinal Plants. It is seldom admitted into Gardens, because where it is suffered to seed, the Plants will rise to a great Distance.

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The 2d Sort grows naturally in several Parts of *North America*, from whence it has been introduced to the Gardens in *Europe*; this hath a perennial Root, but an annual Stalk, which rises about two Feet and a Half high, it is purple, and has many dark Spots upon it. The Leaves are rough, and oval Spear-shaped, having Foot Stalks; they are placed by Threes round the Stalk toward the Bottom, but upward by Pairs opposite at each Joint. The Stalks are terminated by Clusters of purple Flowers, growing in a Sort of Corymbus; these come out in *July* and *August*, and, in warm Seasons, will ripen its Seeds in Autumn.

The 3d Sort grows naturally in *North America*; this rises with an upright Stalk, near 4 Feet high, garnished with long, narrow, Spear-shaped Leaves at each Joint; these are deeply sawed on their Edges, and the Mid-rib is oblique to the Foot Stalk; they are placed by Fours round the Stalk in Whorls, and are of a dark green Colour. The Stalks are terminated by Bunches of purple Flowers like the last, which appear at the same Time. This hath a perennial Root, and an annual Stalk.

The 4th Sort grows naturally in *Virginia* and *Carolina*; this hath a perennial Root, which sends out many twining Stalks in the Spring; these twist about any neighbouring Support, and rise 5 or 6 Feet high, garnished at each Joint with two Heart-shaped Leaves, which are indented on their Edges, and terminate in acute Points; at each Joint two small Side Branches come out, which are terminated by Clusters of white Flowers, so that the Stalks seem covered with them most part of their Length, but as these come late in the Season, so unless the Summers prove warm, the Plants do not flower well in *England*.

Another of these Plants with purple Flowers, standing on longer Foot Stalks was sent me from *Campeachy*, but the Stalks and Leaves are very like those of this Sort, so that I doubt whether it be a distinct Species.

The 5th Sort grows naturally in *New England* and *Virginia*, from both of these Countries I have received the Seeds; this hath a perennial Root, and an annual Stalk; it rises with upright Stalks about a Foot high; these have their Joints pretty near each other, where they are garnished with roundish Heart-shaped Leaves, sitting close to the Stalks; they are sawed on their Edges, and are of a light green Colour. The Flowers are produced in small loose Panicles at the Top of the Stalks; they are white, and have two small green Leaves immediately under the Flowers; they appear the latter End of *June*, but the Seeds seldom ripen in *England*.

The 6th Sort grows naturally at *La Vera Cruz*, in *America*, from whence I received the Seeds; this hath a shrubby climbing Stalk, which rises to the Height of 10 or 12 Feet, fastening itself to any neighbouring Prop for Support; these are garnished with Heart-shaped Leaves, placed by Pairs opposite; they are about three Inches long, and one and a Half broad, of a lucid green; the Flowers come out in long branching Panicles, which proceed from the Side of the Stalks, and the Stalks are terminated by a branching Panicle of white Flowers. This Sort is tender, so will not live in this Country without artificial Heat.

The 7th Sort rises with upright Stalks, 3 Feet high, garnished with oval Leaves at each Joint, placed oppo-

site by Pairs; they have very short Foot Stalks, and are sawed on their Edges; from the Sides of the Stalks, at every Joint, are produced two slender Branches which stand erect; these, and the principal Stalks, are terminated by Clusters of white Flowers in *August* and *September*; the Stalks decay in Winter, but the Root is perennial. This grows naturally in *Pensylvania*, and other Parts of *America*.

The 8th Sort grows naturally in *Virginia* and *Pennsylvania*; this hath a perennial Root, and an annual Stalk. The Stalks rise from 2 to 3 Feet high, they are hairy, and garnished with rough Leaves at each Joint, which are from 3 to 4 Inches long, and about an Inch broad at their Base, gradually lessening to a very acute Point; the two Leaves are joined at their Base, so the Stalks seem to grow through them; they are of a dark green, and are covered with short Hairs. The upper Part of the Stalk divides into many slender Foot Stalks, each sustaining a close Cluster of white Flowers. These come out in *July*, and in warm Seasons, the Seeds will sometimes ripen in *England*.

The 9th Sort grows naturally at *La Vera Cruz*, from whence the Seeds were sent me; this rises with an upright Stalk, near 2 Feet high, garnished toward the Bottom with oblong obtuse Leaves, of a thick Substance, and crenated on their Edges; the upper Part of the Stalk is naked to the Top, where the Flowers come out in a thick Panicle; they are blue, and have single Empalements. This flowers late in Autumn, but never ripens Seeds here; the Root is biennial, and perishes soon after it has flowered.

The 10th Sort was sent me from *La Vera Cruz*, where it was found growing naturally; this hath a thick woody Stalk, which rises 12 or 14 Feet high, sending out many Branches, which are channelled, and covered with a brown Bark; these are garnished with regular Heart-shaped Leaves, as large as those of the Mulberry Tree; they are of a light green Colour, and sawed on their Edges, placed by Pairs opposite upon Foot Stalks, near 2 Inches long; the upper Part of the Branches are terminated by 4 or 5 Pair of Foot Stalks, which come out opposite from the Joints, and the Top is terminated by an odd one; these sustain branching Panicles of white Flowers, which together form a long loose pyramidal Thyse, and make a fine Appearance, for there are no Leaves intermixed with the Flowers, but so far as the Spike reaches the Stalks are naked. This Sort has flowered in the *Chelsea* Garden, but did not produce Seeds.

The 11th Sort grows naturally at *La Vera Cruz*, this rises with many shrubby Stalks, near 5 Feet high, which divide into many slender Branches, whose Joints are 3 or 4 Inches asunder; at each of these come out two oval Leaves about three Quarters of an Inch long, and Half an Inch broad, standing upon long slender Foot Stalks; they have several black Spots on their Surface. The Branches come out horizontal, and are terminated by small Bunches of white Flowers, whose Empalements are single, and composed of seven narrow Spear-shaped Leaves, divided to the Bottom.

The 12th Sort rises with an upright round Stalk, to the Height of 3 Feet, sending out several Branches toward the Top, which come out regularly by Pairs; opposite;

posite; they are garnished with Leaves, placed by Pairs; these are two Inches and a Half long, and about one Third of an Inch broad, having three longitudinal Veins; they are of a light green Colour, and entire. The Flowers stand upon long Foot Stalks at the End of the Branches, some sustaining one, some two, and others three or four Flowers; they are white, and appear late in Autumn. This grows naturally in *Carolina*.

The 13th Sort grows naturally in *Maryland*; this hath a perennial Root and an annual Stalk, which rises 3 Feet high, dividing upward into many Branches, closely garnished with narrow Spear-shaped Leaves, from two to three Inches long, and a Quarter broad, of a deep green sitting close to the Branches; they have three longitudinal Veins, and the upper Part sharply sawed on the Edges, ending in acute Points. The Branches are terminated by roundish Clusters of white Flowers, which appear in *August*, and continue till *October*, and in warm Seasons they are succeeded by Seeds which ripen here.

The 14th Sort grows naturally in *Jamaica*, and in most of the Islands in the *West-Indies*; this rises with shrubby Stalks about 6 or 7 Feet high, dividing into many Branches, garnished with Heart-shaped Leaves, ending in acute Points, and indented on their Edges, having three longitudinal Veins; the upper Part of the Branches are terminated by slender Foot Stalks, each sustaining a small Cluster of white Flowers, included in oblong scaly Empalements of a silvery Colour.

The 15th Sort was sent me from *La Vera Cruz*; this rises with an upright branching Stalk, 3 Feet high; sending out two Side Branches from every Joint, almost the whole Length, which are terminated by loose Spikes of red Flowers, as is also the principal Stalk. The Leaves are Heart-shaped, rough, and crenated on their Edges, sitting close to the Stalks; they are of a light green, and a little hoary.

The 16th Sort was sent me from *Jamaica*; this hath slender twining Stalks, which fasten themselves to any neighbouring Support, and rise 8 or 10 Feet high, sending out small Branches by Pairs, opposite, at most of the upper Joints. The Leaves on the lower Part of the Stalk are Heart-shaped, ending in acute Points; the upper Leaves are almost triangular, smooth, and of a lucid green; the upper Part of the Stalks have long branching Spikes of white Flowers, which are small, and sit close to the Foot Stalks.

The 17th Sort grows naturally in *Pennsylvania*; this hath a perennial Root, from which arise several upright Stalks, which grow 7 or 8 Feet high, in a moist Soil, or where they are supplied with Water in dry Weather; these are garnished with oval, rough, Spear-shaped Leaves, a little sawed on their Edges; they are placed in Whorls round the Stalks, sometimes seven, at other Places four or five of these at each Joint; they are about three Inches long, and two broad. The Stalks are terminated by a loose Corymbus of purple Flowers, which appear in *August*, and continue till *October*, but are not succeeded by Seeds in *England*.

The 18th Sort rises with a single upright green Stalk, about 4 Feet high, garnished at each Joint, by 4 Spear-shaped Leaves placed in Whorls round the Stalks; they

are six Inches long, and two broad in the Middle, lessening to both Ends, and terminating in acute Points; they are rough, sawed on their Edges, and stand on short Foot Stalks; the Stalk is terminated by a close Corymbus of purple Flowers, which appear in *July*, and continue till *September*. The Root is perennial, but the Stalks decay every Winter; it grows naturally in *North America*.

The 19th Sort grows naturally in *Carolina*; this hath a creeping Root, which multiplies very fast. The Stalks rise about 2 Feet high; they are garnished with oval Heart-shaped Leaves, which have Foot Stalks, and are sawed on their Edges. The Flowers are produced at the Top of the Stalks in a Sort of Corymbus; they are of a fine blue Colour, but the Roots spread so much as to cause Barrenness of Flowers after the first Year.

All these Sorts may be propagated by Seeds; several of them ripen their Seeds in *England*; these should be sown in Autumn as soon as they are ripe, for then the Plants will come up the following Spring; but if they are kept out of the Ground till Spring, the Plants will not come up till the Year after; and those Seeds which are procured from *America* should be sown as soon as they arrive, for though they may not grow the first Year, yet there will be a greater Certainty of their succeeding, than when they are kept longer out of the Ground.

The 2d, 3d, 5th, 7th, 8th, 12th, 13th, 17th, 18th, and 19th Sorts, are hardy Plants; the Seeds of these may be sown in the full Ground, but Care must be taken in the sowing to keep the Sorts separate; for as the Seeds of the Plants have a light Down adhering to them, they are easily displaced by the least Wind, so that the best Way will be to sow them in Drills, but these should be but shallow, for if the Seeds are buried too deep, they will not grow. The Bed in which these are sown, should not be too much exposed to the Sun, but rather have an East Aspect, where the Morning Sun only reaches it; but where it is more exposed, it should be shaded with Mats in the Heat of the Day, and the Ground kept pretty moist; for as these Plants generally grow in moist shady Situations in their native Countries, they will succeed better when they have a Soil and Situation somewhat like that; though as we want their Heat in Summer, the Plants will thrive here when exposed to the Sun, provided they have a moist Soil, or are supplied with Water in dry Weather.

When the young Plants come up, they must be kept clean from Weeds, and where they are too close, some should be drawn out to give Room for the others to grow, and if these are wanted, they may be planted in another Bed, where, if they are shaded and watered, they will soon take Root; after which they will require no farther Care but to keep them clean from Weeds till the following Autumn, when they may be transplanted to the Places where they are to remain. As the Roots spread out to a considerable Distance, they should not be allowed less than 3 Feet from any other Plants, and some of the largest growing should be allowed four Feet. If the Soil in which they are planted is a soft gentle Loam, they will thrive much better, and flower stronger than in light dry Ground, in which, if they are not duly watered in dry Summers, their

Leaves

Leaves will shrink, and their Stalks will not grow to Half their usual Height.

All these Sorts have perennial Roots, by which they may be propagated; for as some of them do not perfect Seeds in England, that is the only Way of increasing the Plants here; some of the Sorts have creeping Roots, sending out Offsets in great Plenty, so these are easily propagated; and the others may be taken up, or the Heads taken off from them every other Year, in doing which Care should be taken not to cut or injure the old Plants too much, which would cause them to flower weak the following Year. The best Time to remove these Plants is in Autumn, as soon as they have done growing, that they may get fresh Roots before the Frost comes on; but if that should happen soon after their Removal, if the Surface of the Ground is covered with Tan, or dried Leaves to keep out the Frost, it will effectually secure them; and if this is done to the old Plants in very severe Winters, it will always preserve them, but the 19th Sort is the only one, which I have known killed by Frost: However, it may not be amiss to practise this on the young Seedling Plants, which have not so good Roots, nor are so well established in the Ground; the future Culture will be only to dig the Ground about them every Spring, and keep them clean.

The 4th Sort sends out many weak twining Stalks, which require Support, so there should be some Stakes fixed down by their Roots in the Spring when they begin to shoot, to which the young Stalks should be lead and fastened, and afterward they will twine round them and rise 4 or 5 Feet high if they are supplied with Water, and in warm Seasons they will produce plenty of white Flowers in August. This Sort is sometimes killed in very severe Winters, if not covered; but if, when the Stalks decay in Autumn, the Ground about them be covered with some old Tanners Bark, it will effectually secure the Roots. This Sort multiplies very fast by its creeping Roots, which may be parted every other Year.

The 6th and 16th Sorts have twining slender Stalks, which require support in like Manner; but these are Natives of warm Countries, so will not thrive in England, unless placed in a warm Stove; therefore they should be planted in Pots and plunged into the Tan Bed in the Stove, where, if they are supplied with Wet in hot Weather, they will thrive and produce Flowers. The 6th Sort hath shrubby Stalks, and does not propagate by the Root, so Layers should be made of the young Branches, which will put out Roots if they are properly supplied with Water; but the 16th Sort may be propagated by parting the Roots in the same Manner as the 4th Sort.

The 9th and 15th Sorts have perennial Roots, but their Stalks decay every Winter. These are tender Plants, so should be planted in Pots, and kept constantly plunged in the Tan Bed in the Stove, where they will thrive and flower. These may be propagated by cutting off some of their young Shoots about the Middle of June, when they have Strength, and being planted into Pots filled with light Earth and plunged into a moderate hot Bed, where if shaded from the Sun and gently watered as they may require it, they will put out Roots in

six Weeks, and may then be transplanted into separate Pots, and treated as the old Plants.

The 10th, 11th, and 14th Sorts have shrubby Stalks, which are perennial. These are Natives of warm Countries, so will not thrive in England out of a Stove; therefore they should be planted in Pots and kept plunged in the Tan Bed of the Stove, and treated as the former Sorts. These will sometimes take Root from Cuttings, but not very freely, so the best Way is from Seeds when they can be procured.

When the Seeds of these tender Sorts can be had from their native Countries, the Plants raised that Way, are much preferable to those which are obtained by any other Method, and will flower much stronger, therefore should be preferred; but as these Seeds seldom grow the first Year, few Persons have Patience enough to wait for the Plants coming up. When any of these Seeds are brought over, they should be sown in Pots, that they may be removed at any Time; the Pots should be plunged into a moderate hot Bed, and the Earth kept tolerably moist, the Glasses should also be shaded in the Heat of the Day, to prevent the Earth from drying; in this hot Bed the Pots may remain till Autumn, when they should be plunged between the Plants in the Bark Stove, and in the Spring removed to a gentle hot Bed, which will bring up the Plants soon after. When these are fit to remove, they should be planted in separate small Pots, and plunged into the hot Bed again, shading them from the Sun till they have taken new Root; then they should have a large Share of free Air admitted to them in warm Weather, and frequently refreshed with Water.

In the Winter these Plants should be more sparingly watered, especially those Sorts whose Stalks decay; and in Summer, they should have a large Share of free Air admitted to them, with which Management they will thrive and flower.

EUPHORBIA. *Lin. Gen. Plant. 536. Euphorbium. Boerb. Ind. alt. 258. Tithymalus. Tourn. Infl. R. H. 85, Tab. 18. The Burning Thorny Plant.*

The Characters are,

The Flower hath a permanent Emplacement of one Leaf, which is swelling, rough, and divided into 5 Parts at the Brim. The Flower hath 4 or 5 thick truncated Petals, and 12 or more Stamina which are inserted in the Receptacle; they are longer than the Petals, and terminated by globular Summits. In the Center is situated a three cornered Germen, supporting 3 bifid Styles, crowned by obtuse Stigmas. The Germen afterward becomes a roundish Capsule with 3 Cells, each containing one roundish Seed.

The Species are,

1. **EUPHORBIA aculeata triangularis subnuda articulata, ramis patentibus** *Lin. Hort. Cliff. 196. Euphorbia* with triangular jointed Stalks which are naked, and have Spines and spreading Branches. This is the *Euphorbium verum antiquorum. Hort. Amst. 1. p. 23. True Euphorbium of the Ancients.*

2. **EUPHORBIA aculeata nuda subquingularis, aculeis geminatis.** *Hort. Cliff. Euphorbia* with naked Stalks, which have four or five Angles, and double Spines. This is the *Euphorbium tetragonum & pentagonum spinosum Canarinum. Boerb. Ind. alt. Canary Euphorbium.*

3. **EUPHORBIA aculeata nuda triangularis articulata, ramis**

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ramis erectis. Thorny jointed triangular *Euphorbia*, with upright naked Branches. This is the *Euphorbium trigonum* & *tetragonum spinosum*, *ramis compressis*. D'Isnard. *AA. Par.* 1720. Prickly *Euphorbium* having three and four Angles with compressed Branches.

4. *EUPHORBIA aculeata nuda multangularis, aculeis geminatis*. Lin. Hort. Cliff. Thorny *Euphorbia* having many Angles and Spines growing by Pairs. This is the *Euphorbium cerei* effigie *caulibus crassioribus, spinis validioribus armatum*. Hort. Amst. Torch-shaped *Euphorbium*, with thick Stalks armed with strong Spines.

5. *EUPHORBIA aculeata seminuda, angulis oblique tuberculatis*. Lin. Hort. Cliff. 196. Thorny half naked *Euphorbia*, with oblique, tubercular Angles, commonly called the Oleander-leaved *Euphorbium*. This is the *Euphorbium angulosum, foliis nerii latioribus*. Boerb. Ind. Angular *Euphorbium*, with broad Oleander Leaves.

6. *EUPHORBIA aculeata nuda, septem-angularis, spinis solitariis subulatis floriferis*. Lin. Hort. Cliff. 196. Naked septangular thorny *Euphorbia*, with single Awl-shaped Spines, producing Flowers at their Extremities. This is the *Euphorbium heptagonum, spinis longissimis in apice fructiferis*. Boerb. Ind. alt. *Euphorbium* with seven Angles and very long Spines, bearing Fruit at their Tops.

7. *EUPHORBIA inermis testa tuberculis imbricatis, foliolo lineari instructis*. Lin. H. Cliff. *Euphorbia* without Thorns, and closely covered with Tubercles lying over each other like Tiles, and narrow Leaves. This is the *Euphorbia Afrum, caule crasso squamoso, ramis in capitulis Medusæ speciem cincto*. Boerb. Ind. alt. 258. African *Euphorbium* with a thick scaly Stalk, commonly called *Medusa's Head*.

8. *EUPHORBIA aculeata nuda, angulis tuberosis spinis interstinctis*. Lin. Sp. Plant. 451. Naked prickly *Euphorbia*, with tuberosus Angles having Spines growing between them.

9. *EUPHORBIA aculeata nuda, multangularis, spinis solitariis subulatis*. Prod. Leyd. 195. Naked thorny *Euphorbia*, with many Angles, and single Awl-shaped Spines. This is the *Euphorbium cerei* effigie, *caulibus gracilioribus*. Boerb. Ind. alt. 1. 258. *Euphorbium* with the Appearance of Torch Thistle, and a slender Stalk.

10. *EUPHORBIA inermis imbricata tuberculis foliolo lineari instructis*. Hort. Cliff. Imbricated *Euphorbia* without Spines, having Tubercles furnished with very narrow Leaves. This is the *Euphorbium Afrum, facie fructus pini*. Boerb. African *Euphorbium* like the Pine Apple, commonly called Little *Medusa's Head*.

11. *EUPHORBIA inermis, ramis patulis simplicibus teretibus, foliolis linearibus instructis*. *Euphorbia* without Spines, having single spreading Branches which are taper, and terminated with very narrow Leaves.

12. *EUPHORBIA inermis ramis teretibus procumbentibus tuberculis quadrangis*. *Euphorbia* without Spines, and having trailing Branches with quadrangular Tubercles.

13. *EUPHORBIA inermis, ramis plurimis procumbentibus, squamosis, foliolis deciduis*. *Euphorbia* without Spines, many trailing scaly Branches and deciduous Leaves.

14. *EUPHORBIA inermis fruticosa seminuda filiformis erecta, ramis patulis determinatè confertis*. Lin. Hort. Cliff. 197. Shrubby erect *Euphorbia* without Spines, and slender spreading Branches terminating in Clusters, com-

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monly called *Indian Tree Spurge*. This is the *Tithymalus Indicus frutescens*. Hort. Amst. 1. p. 27.

15. *EUPHORBIA inermis fruticosa nuda filiformis volubilis, cicatricibus oppositis*. Hort. Cliff. Shrubby naked *Euphorbia*, without Spines and slender twining Branches, commonly called *Indian Climbing Spurge*. This is the *Tithymalus Indicus vimineus penitus apbyllos*. *Indian Spurge* with slender Branches, without Leaves.

16. *EUPHORBIA inermis fruticosa seminuda filiformis flaccida, foliis alternis*. Lin. Hort. Cliff. 197. Naked shrubby *Euphorbia*, without Spines, taper flaccid Branches, and Leaves placed alternately, commonly called *Tree Spurge of Mauritania*. This is the *Tithymalus apbyllus Mauritania*. Hort. Eltb. 384.

17. *EUPHORBIA foliis oppositis subcordatis petiolatis emarginatis integerrimis, caule fruticoso*. Lin. Sp. Plant. 453. *Euphorbia* with Heart-shaped Leaves placed opposite upon Foot Stalks, which are indented at the Top and entire, and a shrubby Stalk. This is the *Tithymalus arboreus Americanus cotini folio*. Hort. Amst. 1. p. 29. *Tree American Spurge* with a *Venice Sumach Leaf*.

18. *EUPHORBIA umbellâ quadrifidâ, dichotomâ, foliis oppositis integerrimis*. Lin. Sp. Plant. 457. *Euphorbia* with a quadrifid dichotomous Umbel, and entire Leaves placed opposite. This is the *Tithymalus latifolius Cataputia dictus*. H. L. Broad-leaved *Spurge*, called *Cataputia*.

19. *EUPHORBIA umbellâ subobtusidâ, bifidâ, involu-cellis subovatis, foliis spatulatis patentibus carnosiss mucronatis margine scabris*. Lin. Sp. Plant. 461. *Euphorbia* with an Umbel divided into eight Points, whose small Involucrum are oval, and spreading fleshy pointed Leaves shaped like a Spatula, having rough Borders. This is the *Tithymalus myrsinites latifolius*. C. B. P. 296. Broad leaved *Myrtle Spurge*.

20. *EUPHORBIA umbellâ multifidâ, dichotomâ, involu-cellis subcordatis, primariis triphyllis, caule arboreo*. Lin. Sp. Plant. *Euphorbia* with a multifid dichotomous Umbel, Heart-shaped small Involucrum, the first three leaved, and a Tree-like Stalk. This is the *Tithymalus myrtifolius arboreus*. C. B. P. *Myrtle-leaved Tree Spurge*.

21. *EUPHORBIA umbellâ multifidâ, dichotomâ, involu-cellis perfoliatis orbiculatis, foliis obtusis*. Lin. Sp. Plant. 463. *Euphorbia* with a multifid Umbel divided by Pairs, orbicular perfoliate Involucrum, and obtuse Leaves. This is the *Tithymalus cbaracias amygdaloides*. C. B. P. 290. *Wood Spurge*.

22. *EUPHORBIA umbellâ multifidâ, subtrifidâ, bifidâ, involu-cellis ovatis, foliis lanceolatis, ramis sterilibus*. Lin. Sp. Plant. 462. *Euphorbia* with a multifid Umbel, which is subtrifid and bifid, the small Involucrum oval, Spear-shaped Leaves, and sterile Branches. *Tithymalus palustris fruticosus*. C. B. P. *Shrubby Marsh Spurge*.

23. *EUPHORBIA umbellâ quinquefidâ, quadrifidâ, dichotomâ, involu-cellis subrotundis acutis, foliis lanceolatis*. Lin. Sp. Plant. 460. *Euphorbia* with a quinquefid and quadrifid dichotomous Umbel, a pointed roundish Involucrum, and Spear-shaped Leaves. This is the *Tithymalus Orientalis, salicis folio, caule purpureo, flore magno*. Tourn. Cor. 2. Eastern *Spurge* with a Willow Leaf, a purple Stalk, and large Flower.

24. *EUPHORBIA umbellâ quinquefidâ, trifidâ dichotomâ, involu-cellis ovatis, foliis lanceolatis, capsulis lanatis*. Lin. Sp. Pl. 460. *Euphorbia* with a quinquefid, trifid Umbel,

Umbel, dividing by Pairs, an oval Involucrum, Spear-shaped Leaves and woolly Capsules. This is the *Tithymalus arboreus*, caule corallino, folio Hyperici, pericarpio barbato. Boerb. Ind. Tree Spurge with a red Stalk, a St. John's Wort Leaf, and bearded Capsule.

25. *EUPHORBIA umbellâ sextifidâ, dichotomâ, involu-cellis ovalibus, foliis integerrimis, ramis nullis capsulis verrucosis*. Lin. Sp. Plant. 462. *Euphorbia* with a six pointed dichotomous Umbel, oval Involucrum, entire Leaves, no Branches, and warted Capsules. This is the *Tithymalus Hybernicus Machingboy dictus*. Mer. Pin. Irish Spurge, called Machingboy.

26. *EUPHORBIA umbellâ quinquefidâ, involu-cellis bifidâ obcordatis*. Lin. Sp. Plant. 457. *Euphorbia* with a quinquefid bifid Umbel, and Heart-shaped Involucrum. This is the *Tithymalus tuberosâ pyrisformi radice*. C. B. P. Spurge with a tuberous Pear-shaped Root.

27. *EUPHORBIA umbellâ quinquefidâ, dichotomâ, involu-cellis ovato-lanceolatis mucronatis, foliis inferioribus setaceis*. Lin. Sp. Plant. 458. *Euphorbia* with a quinquefid dichotomous Umbel, oval Spear-shaped Involucrum which are pointed, and the lower Leaves bristly. *Tithymalus Cyparissius*. Alp. Exot. 65. Cypress Spurge.

28. *EUPHORBIA umbellâ multifidâ, bifidâ, involu-cellis orbiculatis, foliis lineari-lanceolatis villosis*. *Euphorbia* with a multifid, bifid Umbel, orbicular Involucrum, and narrow Spear-shaped hairy Leaves. *Tithymalus Creticus characias, angustifolius, villosus & incanus*. Tourn. Cor. i. Cretan Wood Spurge with narrow hairy and hoary Leaves.

29. *EUPHORBIA umbellâ multifidâ, dichotomâ, involu-cellis persiliatis, subcordatis, foliis lanceolatis integerrimis*. Lin. Sp. Plant. 463. *Euphorbia* with a multifid dichotomous Umbel, Heart-shaped persiliate Involucrum, and entire Spear-shaped Leaves. This is the *Tithymalus sylvaticus lunato flore*. C. B. P. 290. Wood Spurge with a Moon-shaped Flower.

30. *EUPHORBIA inermis foliis serratis petiolatis difformibus ovatis lanceolatis panduriformibus*. Lin. Sp. Plant. 453. *Euphorbia* without Spines, having sawed Leaves with Foot Stalks which are deformed, oval, Spear-shaped, and like a Fiddle. *Tithymalus Curassavicus, salicis & atriplicis foliis variis, caulibus viridantibus*. Pluk. Alm. 396. Spurge from Curassao, with variable Leaves like Willow and Orach, and a green Stalk.

31. *EUPHORBIA dichotomâ, foliis serratis ovali-oblongis glabris, corymbis terminalibus, ramis divaricatis*. Lin. Sp. Plant. 454. Dichotomous *Euphorbia* with oblong, oval, smooth, sawed Leaves, and divaricated Branches, terminated by Umbels. This is the *Tithymalus erectus acris, parietariae foliis glabris, floribus ad caulum nodos conglomeratis*. Sloan. Cat. Jam. 82. Upright acrid Spurge, with smooth Pellitory Leaves, and Flowers growing in Clusters from the Joints of the Stalk.

32. *EUPHORBIA inermis, herbacea, ramosa, foliis subcordatis integerrimis petiolatis floribus solitariis*. Lin. Sp. Plant. 453. Branching herbaceous *Euphorbia* without Spines, having entire Heart-shaped Leaves with Foot Stalks, and single Flowers. This is the *Tithymalus Americanus, erectus, annuus, ramosissimus cymis caryophyllari foliis*. Houst. Mss. Upright, annual, branching Spurge of America, with Leaves like Small Basil.

The first Sort has been generally taken for the true

Euphorbium of the Ancients, and as such hath been directed for medicinal Use; but it is from the second Sort, that the Drug now imported under that Title in England is taken. Dr. Linnæus supposes the fourth to be the Sort which should be used, though as they are all nearly of the same Quality, so it may be indifferent which of them that Drug is taken from, which is the inspissated Juice of the Plant.

The 1st Sort hath a triangular compressed succulent Stalk, which is jointed, and rises to the Height of seven or eight Feet; sending out many irregular twisting Branches, for the most Part three cornered, but have sometimes only two, and at others four Angles; they are compressed, succulent, and spread out on every Side of the Stalk; these have at the Extremity of the Branches a few short roundish Leaves, which soon fall off; near these come out now and then a few Flowers, which have five thick whitish Petals, with a large three cornered Germen in the Center; these soon drop off without having any Seeds. It grows naturally in India, from whence the Plants were brought to Holland, and since communicated to the curious Gardens in Europe.

The 2d Sort grows naturally in the Canary Islands, from whence I have been credibly informed, the *Euphorbium* which is imported into England, is now brought. In its native Country this grows 20 Feet high or more, but in England is rarely seen more than 6 or 7; nor is it of any Advantage to have them so tall here, because they send out many Branches which are large and succulent, so render the Plants too heavy to be easily removed. This hath a very thick green succulent Stalk, which has four or five large Angles or Corners, closely armed with black crooked Spines, which come out by Pairs at every Indenture: The Stalks send out from every Side large succulent Branches of the same Form, which extend to the Distance of 2 or 3 Feet, then turn their Ends upwards, so that when the Plants are well grown, they have some Resemblance to a branched Chandelier; these have no Leaves, but are closely armed with black Spines like the Stalks; at the End of the Branches come out the Flowers, which are shaped like those of the first Sort.

The 3d Sort hath a naked three cornered Stalk which is compressed, sending out a great Number of Branches which grow erect, and join up to the main Stalk; these are generally three cornered, but some vary to four; they are jointed and armed with short crooked Spines, but have no Leaves, nor do the Plants produce Flowers here. This grows naturally in India.

The 4th Sort puts out many Stalks just above the Surface of the Ground, which are thick, succulent, and roundish, having 8 or 10 Angles while young, but as they grow old they lose their Angles and become round; the Branches grow distorted and irregular, first horizontal, and afterward turn upward; they are armed with small crooked Spines on their Angles, and on the upper Part of the Branches come out the Flowers, which are small, and of a greenish white, shaped like the 2d Sort. This grows naturally in India.

The 5th Sort grows naturally in India; this rises with a strong upright Stalk 5 or 6 Feet high, which hath irregular Angles, and Protuberances oblique to the Angles; the lower Part of the Stalk is naked, the upper Part is branching, and the Branches armed with crooked Spines;

at every Protuberance, and at the Top, they are garnished with oblong Leaves of a lucid green, very smooth, entire, and rounded at their Ends: these fall off, and the Plants remain naked for some Months, and then the Flowers come out, which sit close to the Branches, and are of a greenish white Colour; the Leaves come out in Autumn, and fall off in Spring.

The 6th Sort rises with a roundish, upright, succulent Stalk about three Feet high, putting out several Branches on the Side of the same Form; these have seven Angles or Furrows, which are armed with long single black Thorns; at the End of which come out small Flowers, of the same Form with those of the other Sorts, and are sometimes succeeded by small Fruit.

The 7th Sort hath thick, roundish, succulent Stalks, which are scaly; these send out many Branches from their Sides of the same Form, which are twisted, and run one over another, so as to appear like a Parcel of Serpents coming out from the Stalks, from whence it had the Appellation of *Medusa's Head*. The Ends of the Branches are garnished with narrow, thick, succulent Leaves, which drop off, and round the upper Part of the Branches the Flowers come out; these are white, and of the same Form with those of the other Species, but larger, and are frequently succeeded by round smooth Capsules with three Cells, each including a single roundish Seed.

The 8th Sort hath roundish Stalks, which swell out like a Belly in the Middle, and have knobbed Angles, between which come out long Spines which are strait; these Stalks rise 2 Feet high, and put out a few Branches on their Side of the same Form; the Flowers are produced at the End of the Branches, sitting close upon the Angles; they are small, of a yellowish green Colour, and shaped like those of the other Species.

The 9th Sort hath Stalks and Branches very like those of the 4th, but much slenderer; the Spines of this are single, and those of the other double; and the Ends of the Branches are closely garnished with Flowers on every Angle, in which it differs from the 4th Sort.

The 10th Sort hath a thick short Stalk, which seldom rises more than eight or ten Inches high, from which come out a great Number of trailing Branches which are slender, and grow about a Foot in Length; these intermix with each other like those of the 7th Sort, but are much smaller, and do not grow near so long, but have the same Appearance, from whence it is called Little *Medusa's Head*; the Ends of these Branches are beset with narrow Leaves, between which the Flowers come out which are white, and shaped like those of the other Species.

The 11th Sort rises with a taper Stalk six or seven Inches high, sending out from the Top a few taper Branches, which spread out on every Side; these are not scaly, like those of the last Sort, but taper, and garnished at their Ends with several small narrow Leaves which drop off. This Sort hath not yet flowered here, having been but a short Time in England.

The 12th Sort hath a short thick Stalk, which never rises three Inches high, so that the Branches spread on the Surface of the Ground; these seldom grow more than six Inches long, and their Scales swell into a Sort of Protuberances which are square; they have no

Leaves, and very rarely produce Flowers in England, but has been long an Inhabitant in the Gardens.

The 13th Sort is very like the 7th, but the Stalks never rise more than a Foot or 15 Inches high, so that the Branches spread out near the Ground; these are also much shorter than those of the 7th, but have the same Appearance, and are garnished with narrow Leaves at their End, which fall off as the Branches are extended in Length: This produces a great Number of small white Flowers at the End of the Branches, shaped like those of the other Species, and frequently succeeded by round smooth Capsules with 3 Cells, including one or two roundish Seeds which ripen here.

These Sorts have been by modern Botanists ranged under the Title of *Euphorbium*, and distinguished from the *Tithymali*, more from the Structure and outward Appearance of the Plants, than any real Difference in their Characters; but as the Number of Species of those commonly called Spurge was very great, many of the Writers were willing to separate the *Euphorbia* from that Genus, to lessen the Number of Species.

These Plants are preserved in many curious Gardens, more for the Oddness of their Structure, than any real Beauty; and being so extremely different in their Form, from almost any Plants of European Production, many curious Persons have been induced to preserve the several Sorts in their Gardens.

They are all of them full of a milky acrid Juice, which flows out on their being wounded in any Part; this Juice will blister the Flesh, if it happens to lie upon any tender Part for a short Time, and will burn Linen almost as bad as Aqua Fortis, therefore the Plants should be handled with great Caution; nor should the Ends of their Branches be ever bruised or injured, for if they are, it frequently occasions their rotting down to the next Joint, and sometimes will destroy the whole Plant, if those injured Branches are not cut off in Time; so that whenever the Branches appear to have been injured, the sooner they are cut from the Plants, the less Danger there will be of their suffering from it; nor should any of the Branches be cut between the Joints, for the same Reason.

Most of these Plants were first brought to Europe by the Dutch, who have been very curious to introduce great Numbers of Plants from India, and the Cape of Good Hope; from the latter there hath been a very great Variety of curious Plants of late Years brought to Europe, many of which produce very elegant Flowers, so are the greatest Ornaments of the Conservatory in the Winter and Spring Seasons. These have been brought over in Seeds, but the different Kinds of *Euphorbia* came over most of them in Plants or Cuttings; for these may be easily transported to any Distance, if either of them are put in Boxes, with any soft dry Package, to prevent their being bruised, or their Spines from wounding each other, and kept from Moisture and Cold; with this Care they may be kept six Months out of the Ground, and if carefully planted will take Root and thrive as well as if they had been newly taken from the old Plants, or out of the Ground but a short Time; which is a much more expeditious Method of obtaining the Plants than from Seeds.

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The greatest Part of these succulent Plants, grow naturally upon barren rocky Places or in dry sandy Soils, where few other Plants will thrive; therefore they should never be planted in rich or loamy Earth here, nor suffered to receive much Wet, which will cause them to rot. The best Mixture of Earth for these Plants is, about a 4th Part of screened Lime Rubbish, a 4th Part of Sea Sand, and half of light fresh Earth from a Common; these should be mixed well together, and frequently turned over before it is used, that the Parts may be incorporated, and the Compost sweetened by being exposed to the Air. If this Mixture is prepared a Year before it is wanted, it will be the better, that it may have the Benefit of the Winter's Frost and the Summer's Heat to mellow it; and the oftener it is turned over, and the smaller the Heaps in which it is laid, the Air will penetrate it better, and render it more fit for Use.

These Sorts are easily propagated by Cuttings, which should be taken from the old Plants in June; these must be cut at a Joint, otherwise they will rot: When these Cuttings are taken off, the milky Juice of the old Plants will flow out in Plenty; therefore there should be some dry Earth or Sand applied upon the wounded Part, which will harden and stop the Sap; and the wounded Part of the Cuttings should also be rubbed in Sand, or dry Earth, for the same Purpose; then the Cuttings should be laid in a dry Part of the Stove, for ten Days or a Fortnight; and some of those whose Branches are large and very succulent, may lie 3 Weeks or more before they are planted, that their Wounds may be healed and hardened, otherwise they will rot. When the Cuttings are planted, they should be each put into a small Half-penny Pot, laying Stones or Rubbish in the Bottom, and filling the Pots with the Mixture before directed; then plunge the Pots into a moderate hot Bed, and if the Weather is very hot, the Glasses of the hot Bed should be shaded in the Middle of the Day, and the Cuttings should be gently watered once or twice a Week, according as the Earth may dry: In about 6 Weeks the Cuttings will have put out Roots, so if the Bed is not very warm, the Plants may continue there, provided they have free Air admitted to them every Day, otherwise it will be better to remove them into the Stove, where they may be hardened before the Winter; for if they are too much drawn in Summer, they are very apt to decay in Winter, unless they are very carefully managed. During the Summer Season, the Plants should be gently watered 2 or 3 Times a Week, according to the Warmth of the Season; but in Winter they must not be watered oftener than once a Week, and it should be given more sparingly at that Season, especially if the Stove is not warm: The 1st Sort will require more Warmth and less Water in the Winter than any of the other. This, if well managed, will grow 7 or 8 Feet high, but the Plants must constantly remain in the Stove, giving them a large Share of Air in warm Weather, and in Winter the Stove should be kept in a temperate Degree of Warmth.

The 6th Sort is at present the most rare in England: The Plants of this Sort, which have been procured from Holland, have been most of them destroyed by placing them in Stoves, where, by the Heat, they have

in one Day turned black, and rotted immediately after. This Sort will do in a dry airy Glass Case, with Ficoides, and other succulent Plants, where they may have free Air in mild Weather, and be protected from Frost; in Summer the Plants of this Sort may be exposed in the open Air, in a warm Situation, but should be screened from much Wet: With this Treatment, they will thrive much better than when they are more tenderly nursed.

The 7th, 8th, 10th, 11th, 12th, and 13th Sorts, are also pretty hardy, so will live in a good Glass Case in Winter without Fire, provided the Frost is kept entirely out, and in Summer they may be placed abroad in a warm Situation: As these are very succulent Plants, they should not have too much Wet; therefore, if the Summer should prove very moist, it will be very proper to place these Plants under some Shelter, where they may enjoy the free Air, but may be screened from the Rain, otherwise by receiving too much Wet they will rot.

The 7th Sort will require to be supported, otherwise the Weight of the Branches will draw them upon the Pots; and, by training the Stems up to Stakes, they will grow 4 or 5 Feet high, and a great Number of Side Branches will be produced; these, being very succulent and heavy, are very apt to draw down the Stem, if it hath not Support.

The following Sorts have been, by all the Writers on Botany, placed under the Title of *Tithymalus*; but the 14th and 15th Sorts should, according to their own Distinction, have been placed in the Genus of *Euphorbium*, because they are as destitute of Leaves as most of the Species which they have there placed.

The 14th Sort rises with a taper succulent Stalk, to the Height of 18 or 20 Feet, sending out many Branches of the same Form, which subdivide into many smaller; these are jointed at a great Distance; they are smooth, and of a deep green Colour, having a few small Leaves at their Extremities, which soon fall off. As the Plants grow older, their Stalks become stronger and less succulent, especially toward the Bottom, where they turn to a brown Colour, and become a little woody. The Branches grow diffused and intermix with each other, so form a Sort of Bush toward the Top, but this doth not produce Flowers here.

The 15th Sort sends out a great Number of slender taper Stalks, of a dark green Colour, which are smooth, and twist about each other, or any neighbouring Support, whereby they rise ten or twelve Feet high, putting out smaller Branches upward, which also twine and intermix with the other Stalks; they have no Leaves, nor do they flower in England. These grow in India.

The 16th Sort sends out many taper succulent Stalks from the Root, which rise about 4 Feet high; they are slender and weak, so require Support; these have a light green Bark, and their lower Parts are naked, but their upper Parts are garnished with oblong Leaves, which are smooth, entire, and placed alternate on every Side the Stalks: The Flowers are produced in small Clusters at the End of the Branches, of a yellowish green Colour, and are sometimes succeeded by smooth round Fruit, but the Seeds rarely ripen in England. This Sort grows naturally on the African Shore in the Mediterranean.

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The 17th Sort grows naturally in some of the Islands of the *West-Indies*, and on the Continent. I received Specimens of this Sort from the Island of *Tobago*, and from *Carthage*, where the Plants were growing in Plenty; the *Dutch* Gardens were furnished with it from *Curaçao*, where it grows naturally. This hath an upright Stalk, which rises 6 or 7 Feet high, covered with a light brown Bark, and divides upward into many Branches; these are garnished with roundish Leaves, indented at their Ends, and have Foot Stalks: They are smooth and of a beautiful green, but fall away in Winter, so that in Spring they are almost naked; the Flowers come out from the End of the Branches; they are yellow and small, soon falling away without having any Fruit to succeed them here.

These Sorts are propagated by Cuttings, and treated in the same Manner as the *Euphorbiums*.

The 14th, 15th, and 17th Sorts, are tender, so require a Stove; these must have the same Treatment as the tender Kinds, but the 16th Sort will live in a common Green-house in Winter, and may be exposed abroad in Summer.

The 18th Sort stands in the List of medicinal Plants, but is rarely used in *England* at present; this is a biennial Plant, which perishes after the Seeds are ripe. It grows naturally in *Italy* and the South of *France*, and where it is allowed to scatter its Seeds in a Garden, becomes a Weed here. This rises with an upright succulent Stalk, from 2 to 3 Feet high, garnished with oblong smooth Leaves placed opposite, and sit close to the Stalks; the upper Part of the Stalk divides by Pairs into smaller Branches, and from the Fork between these Divisions come out the Umbels of Flowers, each Fork having one; that which is situated in the first Division being the largest, and those in the upper are the smallest. The Flowers are of a greenish yellow Colour, they appear in *June* and *July*, and the Fruit follows soon after, which is divided into 3 Lobes, and has 3 Cells, each containing one roundish Seed, which is cast out to a Distance by the Elasticity of the Pods. This Sort will propagate itself fast enough when it is once introduced into Gardens, so requires no Care but to keep it clean from Weeds.

The 19th Sort grows naturally in the South of *France*, *Spain*, and *Italy*. This sends out many trailing Branches from the Root, which grow about a Foot long, lying on the Ground; these are closely garnished with thick succulent Leaves, flat, short, and pointed; they spread open on every Side the Branches, and are placed alternate, sitting close to the Stalks: The Flowers are produced in large Umbels at the End of the Branches; the Involucrum of the principal Umbel is composed of several oval-pointed Leaves, but those of the small Umbels have only two Heart-shaped concave Leaves, whose Borders are rough; the Flowers are yellow, and are succeeded by 3 Seeds, inclosed in a roundish Capsule with 3 Cells. This Plant will continue 2 or 3 Years upon a dry warm Soil, and will ripen Seeds annually, which, if permitted to scatter, the Plants will come up, and require no other Care but to keep them clean from Weeds.

The 20th Sort grows naturally in *Crete*, and in several Islands of the *Archipelago*; this rises with an upright

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branching Stem, to the Height of 4 Feet; the Leaves are oblong, pointed, and placed alternate on the Branches; the Flowers come out in Umbels from the Fork between the Branches; they are small, yellow, and rarely succeeded by Seeds in *England*. It is easily propagated by Cuttings during any of the Summer Months, and requires a little Protection from the Frost in Winter.

The 21st Sort grows naturally in the Woods, in *England*; it rises with a shrubby Stalk 3 Feet high; the Flowers are produced in Umbels sitting close to the Stalks, so form a long Spike; the Empalements are of a greenish yellow, and the Petals black, so they make an odd Appearance. It flowers in *May*, and the Seeds ripen in *July*. If the Seeds are sown under Trees in Autumn, the Plants will rise the following Spring, and require no Culture.

The 22d Sort stands in the List of the medicinal Plants by the Title of *Efula major*, but at present is seldom used: This grows naturally in *France* and *Germany* on marshy Places, where it rises 3 or 4 Feet high. It hath a perennial Root, by which it may be propagated better than by Seeds, which seldom grow unless they are sown soon after they are ripe.

The 23d Sort was discovered in the *Levant*, by Dr. *Tournefort*, who sent the Seeds to the Royal Garden at *Paris*; this hath a perennial Root, from which arise many succulent Stalks, 3 Feet high, covered with a purple Bark, and garnished with oblong smooth Leaves, shaped like those of Willow, of a dark green Colour. The upper Part of the Stalks divide, and in the Fork is situated an Umbel of Flowers, of a greenish yellow Colour, which are succeeded by round Capsules with 3 Cells, each containing a single Seed. It flowers in *June*, and the Seeds are ripe in *August*; this may be propagated by parting the Roots, or by sowing the Seeds in Autumn. The Plant is hardy so will endure the greatest Cold of this Country, if planted in a dry Soil.

The 24th Sort grows naturally in *Sicily*, and on the Borders of the *Mediterranean* Sea; this rises with several shrubby Stalks 5 or 6 Feet high, having a red Bark, garnished with oblong, smooth, blunt Leaves, which are placed alternate. The Flowers grow in small Umbels from the Division of their Branches; they are yellow, and are succeeded by roundish Capsules, which are rough, having 3 Cells like the other Species. This is easily propagated by Cuttings during any of the Summer Months, and requires Protection from Frost in Winter.

The 25th Sort grows naturally in *Ireland*, from whence the Roots have been brought to *England*; this hath thick fibrous Roots, which send up several Stalks, which do not branch, about a Foot long, garnished with oblong Leaves, placed alternate on every Side. The Flowers are produced in small Umbels at the Top of the Stalks; they are yellow, and are succeeded by rough warted Capsules with 3 Cells; it flowers in *June*, and the Seeds ripen in *August*. This may be propagated by the Roots, which should be planted in a shady Situation, and a moist Soil.

This Plant was almost the only Physick used by the Natives of *Ireland* formerly, but since the Use of *Mercury*

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cury has been known to them, this has been generally neglected.

The 26th Sort grows naturally in the *Levant*; this hath a knobbed Pear-shaped Root, from which arise 2 or 3 Stalks, about a Foot and a Half high, garnished with oblong Leaves, which are hairy, placed alternate on every Side the Stalk. The Flowers are produced in small Umbels from the Divisions of the Stalk; they are small of a greenish yellow Colour, and are seldom succeeded by Seeds here; it may be propagated by Offsets, sent out from the main Root; these may be taken off in Autumn, and planted in a shady Situation, where they will thrive better than in the full Sun.

The 27th Sort grows naturally at *Aleppo*, and other Parts of the *Levant*; this hath a perennial creeping Root, by which it multiplies very fast, where it is once established. The Stalks of this rise a Foot and a Half high; the lower Leaves are narrow, stiff, and bristly; but those on the upper Part of the Stalk are shaped like the narrow leaved Myrtle. The Flowers are produced in large Umbels from the Divisions of the Stalk; they are yellow, and appear in *June*, but are rarely succeeded by Seeds in this Country. The Roots of this should be confined in Pots, for when they are planted in the full Ground; they creep about to a great Distance.

The 28th Sort grows naturally in many Parts of the *Levant*, and also in *Spain* and *Portugal*. The Seeds of this were brought me from *Scanderoon*, by Mr. Robert Millar, who found the Plants growing plentifully there; he assured me, he saw the Inhabitants wounding these Plants, and collecting their milky Juice, which they mixed up with the Scammony to send Abroad.

The Seeds of this Plant were since sent me from *Portugal*, by Robert More, Esq; who found the Plant growing there naturally; but it had been many Years before an Inhabitant in the *Englisb* Gardens; this rises with a purple shrubby Stalk, near 3 Feet high, garnished with narrow, Spear-shaped, hairy Leaves, set closely on the Stalk alternately on every Side; the upper Part of the Stalk is terminated by Umbels of Flowers, which form a Sort of Spike. The greater Umbels are multifid, but the small ones are bifid. The Involucrum of the Flowers are yellow, and the Petals of the Flowers black; these appear in *May*, and the Seeds ripen in *July*; the young Plants which have been lately raised from Seeds, are generally very fruitful, but the old ones, and those raised by Cuttings, are barren; this may be propagated by Seeds, or Cuttings, and will live abroad if planted in a dry rubbishy Soil, and warm Situation, otherwise they are frequently killed by severe Frost.

The 29th Sort grows naturally in the South of *France*, in *Spain*, and *Italy*; this is a biennial Plant, from whose Root arise 2 or 3 Stalks which grow 2 or 3 Feet high, and are garnished with Spear-shaped Leaves, which are entire. The Umbels of Flowers arise from the

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Division of the Branches; the Involucrum are Heart-shaped, and surround the Pedicle with their Base. The Flowers are yellow, and appear in *June*. The Seeds ripen in *August*, which, if permitted to scatter, the Plants will come up, and require no Care but to keep them clean from Weeds; this must have a shady Situation.

The 30th Sort grows naturally at *La Vera Cruz*, from whence Dr. Housloun sent me the Seeds; this is annual, and rises from 2 to 3 Feet high. The Leaves are sometimes narrow and entire, at other Times oval, and divided in the Middle almost to the Midrib, in Shape of a Fiddle; they also vary in their Colour, some being inclinable to purple, others of a light green; they are sawed on the Edges, and stand on short Foot Stalks. The Flowers are produced in small Umbels at the End of the Branches; they are of a greenish white, and are succeeded by small round Capsules with 3 Cells.

The 31st Sort grows naturally in the Islands in the *West-Indies*; this is an annual, and rises with a branching Stalk about 2 Feet high, garnished with oblong, oval, smooth Leaves, sawed on their Edges. The Flowers grow in small Umbels at the Foot Stalks of the Leaves, gathered into close Bunches; these are white, and are succeeded by small round Capsules, inclosing 3 Seeds.

The Seeds of the 32d Sort were sent me from *La Vera Cruz*; this also is an annual, and rises with an upright Stalk, about a Foot high, dividing into a great Number of Branches, which spread very wide on every Side, garnished with roundish Heart-shaped Leaves, which are entire, standing upon pretty long Foot Stalks. The Flowers come out singly from the Divisions of the Stalk; they are small, of an herbaceous Colour, and are succeeded by small round Capsules, containing 3 Seeds.

The last 3 Sorts are annual; the Seeds of these must be sown on a hot Bed in Spring, and when the Plants are fit to remove, should be each planted in a small Pot filled with light Earth, and plunged into the hot Bed again, and must afterward be treated in the same Manner as other tender annuals from warm Countries.

EUPHRASIA. Eyebright.

This is a medicinal Plant, which grows naturally in the Fields and Commons in *England*, always among Grass, Heath, Furz, or some other Cover, and will not grow when these are cleared from about it, nor will the Seeds grow when sown in a Garden, for which Reason I shall not trouble the Reader with a Description, or any farther Account of it, than that the Herb Women supply the Markets with it in Plenty from the Fields.

EXCORTICATION. A Pulling or Peeling off the outward Bark of Trees.

EXOTICKS. [*Exotica*, Lat.] Exotick Plants are such as are Natives of Foreign Countries.

FABA. Tourn. Inst. 391. Tab. 212. *Vicia*. Lin. Gen. Plant. 782. The Bean; in French, *Fève*.

The Characters are,

The Flower hath a tubulous Empalement of one Leaf, cut into five Segments at the Brim; the three lower Segments being long, and the two upper are very short. The Flower is of a Butterfly Kind. The Standard is large, oval, and indented at the End; the two Sides turn backward, after some Time; it hath two oblong erect Wings, which inclose the Keel, being much longer. The Keel is short, swelling, and closely covers the Parts of Generation; these are joined in one Column, almost to the Top, where they are divided; the 9 Stamina are in 3 Parts, and one stands separate; these are terminated by roundish reclined Summits. At the Bottom is situated an oblong compressed Germen, supporting a short angular Style, crowned by an obtuse Stigma, which is bearded on the 2 Sides. The Germen afterward becomes a long, compressed, leathery Pod, having one Cell, filled with compressed Kidney-shaped Seeds.

There are several Varieties of the Garden Bean, which are known and distinguished by the Gardeners, and do not essentially differ from each other, so I shall not enumerate them as distinct Species, but shall not join these to the Horse Bean, as some have done, who have supposed them to be but one Species; for, having cultivated them more than 30 Years, without finding the Garden Bean degenerate to the Horse Bean, or the latter improving to the former, I conclude they are distinct Species.

There is a great Variety of Garden Beans, now cultivated in the Kitchen Gardens in England, which differ in Size and Shape; some producing Pods much earlier in the Year than others, for which they are greatly esteemed by the Gardeners, whose Profit arises from their early Crops of esculent Plants, therefore they are very careful to improve all those Varieties which have a Tendency to be fit for the Markets first, but as many Sorts of Seeds, when cultivated long in the same Land, are apt to degenerate, so new Seeds should be annually procured, either from Abroad, or some distant Situation, where the Soil is of a different Nature, by which Change many of the Varieties may be continued in Perfection.

I shall begin with the Garden Bean, called by the Botanists, *Faba Major*, to distinguish it from the Horse Bean, which they have titled *Faba minor seu Equina*, and I shall only mention the Names of each, by which they are known among the Gardeners placing them according to their Time of ripening for the Table.

The *Mazagan* Bean is the first and best Sort of early Bean at present known; these are brought from a Settlement of the Portuguese on the Coast of Africa, just without the Streights of Gibraltar; the Seeds of this are smaller than the Horse Bean; and as the Portuguese are slovenly Gardeners, there is commonly a great Number of bad Seeds among them. If this Sort is sown in October, under a warm Hedge, Pale, or Wall, and carefully earthed up when the Plants are advanced, they will be fit for the Table by the Beginning of May; the Stems of this Sort are very slender, therefore, if they

are supported by Strings close to the Hedge or Pale, it will preserve them from the Morning Frosts, which are sometimes severe in Spring, and retards their Growth, so by keeping them close to the Fence it will cause them to come forwarder than if this is neglected; these Beans bear plentifully, but they ripen nearly together, so that there are never more than two Gatherings from the same Plants; if the Seeds of this are saved two Years in England, the Beans will become much larger, and not ripen so soon, which is called a Degeneracy.

The next Sort is the early *Portugal* Bean, which appears to be the *Mazagan* Sort, saved in Portugal; for it is very like those which are the first Year saved in England; this is the most common Sort used by the Gardeners for their first Crop; but they are not near so well tasted as the *Mazagan*; therefore when the *Mazagan* Bean can be procured, no Person would plant the other.

The next is the small *Spanish* Bean; this will come in soon after the *Portugal* Sort, and is a sweeter Bean, therefore should be preferred to it.

Then comes the broad *Spanish*, which is a little later, than the other, but comes in before the common Sorts, and is a good Bearer, therefore is frequently planted.

The *Sandwich* Bean comes soon after the *Spanish*, and is almost as large as the *Windsor*, but, being hardier, is often sown a Month sooner; this is a plentiful Bearer.

The *Toker* Bean, as it is generally called, comes about the same Time with the *Sandwich*, and is a great Bearer, therefore it is now much planted.

The white and black Blossom Beans are by some much esteemed; the Beans of the former are, when boiled, almost as green as Peas, and being a sweet Bean, renders it more valuable; these Sorts are very apt to degenerate, if their Seeds are not saved with great Care.

The *Windsor* Bean is allowed to be the best of all the Sorts for the Table; when these are planted on a good Soil, and allowed sufficient Room, their Seeds will be very large, and in great Plenty; and when gathered young, are the sweetest and best tasted of all the Sorts; but these should be carefully saved, by pulling out such of the Plants as are not perfectly right, and afterward by sorting out all the good from the bad Beans.

This Sort of Bean is seldom planted before *Christmas*, because it will not bear the Frost so well as many of the other Sorts, so it is generally planted for the great Crop, to come in *June* and *July*.

All the early Beans are generally planted on warm Borders under the Walls, Pales, and Hedges; and those which are designed to come first are usually planted in a single Row pretty close to the Fence; and here I cannot help taking Notice of a very bad Custom, which too generally prevails in Gentlemen's Kitchen Gardens, which is that of planting Beans close to the Garden Walls, on the best Aspects, immediately before the Fruit Trees, which certainly is a greater Prejudice to the Trees, than the Value of the Beans, or any other early Crop; therefore

therefore this Practice should be every-where discouraged; for it is much better to run some Reed Hedges across the Quarters of the Kitchen Garden, where early Beans and Peas may be planted, in which Places they may with more Conveniency be covered in severe Frost; and to these Hedges the Beans may be closely fastened, as they advance in Growth; which, if practised against the Walls where good Fruit Trees are planted, will greatly prejudice the Trees by overshadowing them, and the Growth of these Legumes will draw off the Nourishment from the Roots of the Trees, whereby they will be greatly weakened.

But to return to the Culture of the Beans. Those which are planted early in *October* will come up by the Beginning of *November*; and as soon as they are two Inches above Ground, the Earth should be carefully drawn up with a Hoe to their Stems, and this must be two or three Times repeated, as the Beans advance in Height, this will protect their Stems from the Frost, and encourage their Strength. If the Winter should prove severe, it will be very proper to cover the Beans with Peas Haulm, Fern, or some other light Covering, which will secure them from the Frost; but this Covering must be constantly taken off in mild Weather, otherwise the Beans will draw up tall and weak, and come to little; and if the Surface of the Border is covered with Tanners Bark, it will prevent the Frost from penetrating the Ground to the Roots of the Beans, and be of great Service to them.

In Spring, when the Beans are advanced a Foot high, they should be fastened up to the Hedge with a small Line, so as to draw them as close as possible; this will secure them from being injured by Morning Frosts, which are often so severe in *April*, as to lay those Beans flat on the Ground, which are not thus guarded; at this Time all Suckers from the Roots should be very carefully taken off; for these will retard the Growth of the Beans, and prevent their coming early; and when the Blossoms begin to open toward the Bottom of the Stalks, the Top of the Stems should be pinched off, which will cause those first Pods to stand, and thereby bring them forward. If these Rules are observed, and the Ground kept clean from Weeds, or other Plants, there will be little Danger of their failing.

But lest this first Crop should be destroyed by Frost, it will be absolutely necessary to plant more about 3 Weeks after the first, and so to repeat planting more every three Weeks, or a Month, till *February*; but those planted toward the End of *November*, or the Beginning of *December*, may be planted on sloping Banks, at a Distance from the Hedges; for if the Weather is mild, these will not appear above Ground before *Christmas*; therefore will not be in so much Danger as the first and second Planting, especially if the Surface of the Ground is covered with Tan to keep out the Frost as is before directed; for the first Planting, will, by that Time, be a considerable Height; the Directions before given will be sufficient for the Management of these, only it must be observed, that the larger Beans should be planted at a greater Distance than the small ones; also, that those which are first planted must be put closer together, to allow for some miscarrying; therefore, where a single Row is planted, the Beans may be put 2 Inches asunder, and those of the third and fourth Plant-

ing may be allowed 3 Inches; and when they are planted in Rows across a Bank, the Rows should be two Feet and a Half asunder; but the *Windsor* Beans should have a Foot more Space between the Rows, and the Beans in the Rows should be planted 5 or 6 Inches asunder. This Distance may, by some Persons, be thought too great; but from many Years Experience, I can affirm, that the same Space of Ground will produce a greater Quantity of Beans, when planted at this Distance, than if double the Quantity of Seeds are put on it. In the Management of these later Crops of Beans, the principal Care should be to keep them clear from Weeds, and any other Plants, which would draw away their Nourishment; to keep earthing them up, and, when they are in Blossom, to pinch off their Tops, which, if suffered to grow, will draw the Nourishment from the lower Blossoms, which will prevent the Pods from setting, and the upper Parts only of the Stems will be fruitful; another Thing should be observed in planting the succeeding Crops, which is to make Choice of moist strong Land for the later Crops, for if they are planted on dry Ground, they rarely come to much.

These after Crops should be planted, at about a Fortnight Distance from *February* to the Middle of *May*, after which Time it is generally too late to plant, unless the Land is very strong and moist; for in warm dry light Land all the late Crops of Beans are generally attacked by the black Insects, which cover all the upper Part of their Stems, and soon cause them to decay.

Where the Seeds are designed to be sowed, a sufficient Number of Rows should be set apart for that Purpose, according to the Quantity desired; these should be managed in the same Way as those which are designed for the Table; but none of the Beans should be gathered, though there are some covetous Persons, who will gather all the first ripe for the Table, and are contented to save the after Crop for Seed, but these are never so large and fair as the first; so that if these are for Sale, they will not bring near the Price as the other, therefore what is gained to the Table, is lost in the Value of the Seed; but those who are desirous to preserve the several Varieties, as pure as possible, should never suffer two of the Varieties to grow for Seeds in the same Place, for by their Farina mixing with each other, they will not continue so pure, but be very apt to vary; and in order to keep the early Kinds perfect, those which come the earliest should be saved for Seeds, but this is what few People choose to do, because they are then the most valuable.

When the Seed is ripe, the Stalks should be pulled up, and set upright against a Hedge to dry, observing to turn them every third Day, that they may dry equally; then they may be threshed out, and cleaned, or otherwise stacked up in a Barn, till there is more Leisure for threshing them out; and afterward the Seed should be drawn over, to take out all those that are not fair, preserving the best for Use or Sale.

It is a very good Method to change the Seeds of all Sorts of Beans, and not to sow and save the Seeds long in the same Ground, for they do not succeed so well; therefore, if the land is strong where they are to be planted, it will be the best Way to procure the Seeds from a lighter Ground, and so *vice versa*; by this Method

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thod the Crops will be larger, the Beans fairer, and not so liable to degenerate.

Having given Directions for the Culture of the Garden Beans, I shall next proceed to that of the *Horse Bean*, which is cultivated in the Fields; there are 2 or 3 Varieties of these, which differ in Size and Colour, but that which is now in the greatest Esteem, is called the *Tick Bean*; this doth not grow so high as the other, is a more plentiful Bearer, and succeeds better on light Land than the common *Horse Bean*.

The *Horse Bean* delights in a strong moist Soil, and an open Exposure, for they never thrive well on dry warm Land, or in small Inclosures, where they are very subject to blight, and are frequently attacked by a black Insect, which the Farmers call the black Dolphin; these Insects are often in such Quantities, as to cover the Stems of the Beans entirely, especially all the upper Part of them, and whenever this happens, the Beans seldom come to good; but in the open Fields where the Soil is strong, this rarely happens.

These Beans are usually sown on Land fresh broken up, because they are of Use to break and pulverize the Ground, also to destroy Weeds; so the Land is rendered much better for Corn, after a Crop of Beans, than it would have been before, especially if they are sown and managed according to the New Husbandry, with a Drill Plough, and the Horse Hoe used to stir the Ground between the Rows of Beans, which will prevent the Growth of Weeds, and pulverize the Ground, whereby a much greater Crop of Beans may, with more Certainty, be expected, and the Land will be better prepared for whatever Crop it is designed for after.

The Season for sowing Beans is from the Middle of February to the End of March, according to the Nature of the Soil; the strongest and wet Land should always be last sown; the usual Quantity of Beans, sown on an Acre of Land, is about 3 Bushels, but this is double the Quantity which need be sown, according to the New Husbandry; but I shall first set down the Practice according to the Old, and then give Directions for their Management according to the New. The Method of sowing is after the Plough, in the Bottom of the Furrows, but then the Furrows should not be more than five, or, at most, six Inches deep. If the Land is new broken up, it is usual to plough it early in Autumn, and let it lie in Ridges till after *Christmas*; then plough it in small Furrows, and lay the Ground smooth; these two Ploughings will break the Ground fine enough for Beans, and the third Ploughing is to sow the Beans, when the Furrows should be made shallow, as was before-mentioned.

Most People set their Beans too close; for, as some lay the Beans in the Furrows after the Plough, and others lay them before the Plough, and plough them in, so, by both Methods the Beans are set as close as the Furrows are made, which is much too near; for when they are on strong good Land, they generally are drawn up to a very great Height, and are not so apt to Pod as when they have more Room, and are of lower Growth; therefore I am convinced by some late Trials, that the better Way is to make the Furrows two Feet asunder, or more, which will cause them to branch out into many Stalks, and bear in greater Plenty than when they

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are closer; by this Method half the Quantity of Beans will be sufficient for an Acre of Land, and by the Sun and Air being admitted between the Rows; the Beans will ripen much earlier and more equally than in the common Way.

What has been mentioned must be understood as relating to the Old Husbandry; but where Beans are planted according to the New, the Ground should be four Times ploughed before the Beans are set, which will break the Clods and render it much better for planting; than with a Drill Plough, to which a Hopper is fixed for setting the Beans, the Drills should be made at three Feet asunder, and the Spring of the Hopper set so as to scatter the Beans at three Inches Distance in the Drills. By this Method, less than one Bushel of Seed will plant an Acre of Land. When the Beans are up, if the Ground is stirred between the Rows with a Horse Plough, it will destroy all the young Weeds; and when the Beans are advanced about three or four Inches high, the Ground should be again ploughed between the Rows, and the Earth laid up to the Beans; and if a third Ploughing, at about five or six Weeks after is given, the Ground will be kept clean from Weeds, and the Beans will stalk out, and produce a much greater Crop than in the common Way.

When the Beans are ripe, they are reaped with a Hook, as is usually practised for Peas; and after having lain a few Days on the Ground they are turned, and this must be repeated several Times, until they are dry enough to stack; but the best Method is to tie them in small Bundles, and set them upright; for then they will not be in so much Danger to suffer by Wet, as when they lie on the Ground; and they will be more handy to carry and stack, than if they are loose. The common Produce is from twenty to twenty-five Bushels on an Acre of Land.

The Beans should lie in the Mow to sweat, before they are threshed out; for as the Haulm is very large and succulent, so it is very apt to give and grow moist; but there is no Danger of the Beans receiving Damage, if they are stacked tolerably dry, because the Pods will preserve the Beans from Injury; and they will be much easier to thresh after they have sweat in the Mow, than before; and after they have once sweated and are dry again, they never after give.

By the New Husbandry, the Produce has exceeded the Old by more than ten Bushels on an Acre; and if the Beans which are cultivated in the common Method are observed, it will be found that more than half their Stems have no Beans on them; for by standing close, they are drawn up very tall, so the Tops of the Stalks only produce, and all the lower Part is naked; whereas in the New Method, they bear almost to the Ground; and as the Joints of the Stems are shorter, so the Beans grow closer together on the Stalks.

FABA ÆGYPTIACA, is the *Arum Ægyptiacum*.

FABA CRASSA, is *Anacamperos*.

FABAGO. See *Zygophyllum*.

FAGONIA. *Tourn. Inst. Lin. Gen. Plant.* 475. So named by Dr. *Tournefort*, in Honour of Dr. *Fagon*, who was Superintendent of the Royal Garden at Paris.

The Characters are,

The Flower hath a spreading Empalement, composed of 5 small

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5 small Leaves; it hath 5 Heart-shaped Petals, which spread open, and are narrow at their Base, where they are inserted in the Empalement. It hath 10 erect Stamina, terminated by roundish Summits. In the Center is situated a five cornered Germen, supporting an Awl-shaped Style, crowned by a single Stigma. The Germen becomes a roundish Capsule having 5 Lobes ending in a Point, and 5 Cells, each having a single roundish Seed.

The Species are,

1. FAGONIA spinosa, foliis lanceolatis planis levibus. Hort. Upsal. 103. Prickly Fagonia, whose Leaves are Spear-shaped, plain, and smooth. This is the Fagonia Cretica spinosa. Tourn. Thorny Trefoil of Candia.

2. FAGONIA inermis. Lin. Sp. Plant. 386. Fagonia without Spines. This is the Fagonia Hispanica non spinosa. Tourn. Spanish Fagonia without Thorns.

3. FAGONIA spinosa foliis linearibus convexis. Lin. Sp. Plant. 386. Prickly Fagonia, with narrow convex Leaves. This is the Fagonia Arabica, longissimis aculeis armata. Shaw. Pl. Afr. 229. Arabian Fagonia armed with very long Spines.

4. FAGONIA spinosa foliis lanceolato-linearibus planis, floribus majoribus. Prickly Fagonia, having narrow, Spear-shaped, plain Leaves and larger Flowers. This is the Fagonia Hispanica, minus spinosa, flore magno purpurascens. Jussieu. Spanish less prickly Fagonia, having a large purplish Flower.

The 1st Sort is a Native of the Island of Candia: This has been described by some Botanists under the Title of *Trifolium spinosum Creticum*, which occasioned my giving it the English Name of Thorny Trefoil of Crete; though there is no other Affinity between this and the Trefoil, than that of this having three Leaves or Lobes on the same Foot Stalk.

This is a low Plant, and spreads its Branches close to the Ground, which are extended to the Length of a Foot or more every Way, garnished with small trifoliate Leaves placed opposite; these are oval, plain, and smooth, and at each Joint, immediately below the Leaves, come out two Pair of Spines, one on each Side the Stalk; and at the same Places come out a single blue Flower, standing upon a short Foot Stalk, composed of 5 Spear-shaped Petals, narrow at their Base, where they are inserted into the Empalement; after these fall, the Germen turns to a roundish five lobed Capsule, ending in an acute Point, having 5 Cells, each containing one roundish Seed. It flowers in July and August, but unless the Season proves warm, the Seeds do not ripen in England.

The 2d Sort grows naturally in Spain; this differs from the first in being smooth, the Branches of this having no Thorns; and the Plant will live two Years, whereas the first is annual.

The 3d Sort was discovered by the late Dr. Shaw in Arabia; this is a low Plant with a shrubby Stalk, from whence come out several weak Branches armed with long Thorns; the Leaves are thick, narrow, and convex on their lower Side; the Flowers come out in the same Manner as in the first Sort.

The 4th Sort grows naturally in Spain, where it was discovered by Dr. Jussieu. This is an annual, with trailing Branches like the first Sort, but the Leaves are much narrower, and the Spines smaller and fewer in

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Number; the Flowers are larger, and of a pale purple Colour.

These Plants are propagated by Seeds, sown upon a Border of fresh light Earth, where they are designed to remain, for they do not bear transplanting well; when the Plants come up, they may be thinned out to the Distance of 10 or 12 Inches; and if they are kept clean from Weeds, they will require no other Care.

The 1st and 4th Sorts are annual Plants, which do not perfect their Seeds in England, unless the Seasons prove very warm; therefore the best Way is to sow their Seeds upon a warm Border in Autumn, and in frosty Weather shelter the Plants with Mats or some other Covering to secure them; or if they are sown in Pots and placed under a Frame in the Winter, and the following Spring shaken out of the Pots, and planted in a warm Border, they will come early to flower, and thereby ripe Seeds may be more certainly obtained.

The other two Sorts may be treated in the same Way, for as these seldom flower the first Year from Seeds, the Plants should be either kept in Pots, and sheltered under a Frame in Winter, or placed in a warm Border, where they may be sheltered with Mats, or some other Covering, to preserve them from Frost; the following Summer the 2d Sort will flower and produce ripe Seeds, but the 3d has not perfected any Seeds as yet in England.

FAGOPYRUM. See Helxine.

FAGUS. Tourn. Inst. Lin. Gen. Plant. 951. The Beech Tree; French, Hêtre.

The Characters are,

It hath male and female Flowers on the same Tree; the male Flowers are collected into globular Heads; these have no Petals, but have several Stamina included in an Empalement of one Leaf, which are terminated by oblong Summits. The female Flowers have a one leaved Empalement cut into 4 Parts, but have no Petals; the Germen is fixed to the Empalement, supporting 3 Styles, crowned by reflexed Stigmas. The Germen becomes a roundish Capsule, armed with soft Spines, opening in 3 Cells, each containing a triangular Nut.

We have but one Species of this Genus, viz.

FAGUS. Dod. Pempt. 832. The Beech Tree. This is the *Fagus foliis ovatis obsolete serratis*. Hort. Cliff. 447. The Beech Tree with oval sawed Leaves.

Some Planters suppose there are two distinct Species of this Tree; one they call the Mountain Beech, which they say is a whiter Wood than the other, which they distinguish by the Title of Wild Beech; but it is certain, that this Difference in the Colour of the Wood, arises from the Difference of the Soils in which they grew, for I have not seen any specific Difference in the Trees. There have been Seeds of a Beech Tree brought from North America, by the Title of Broad leaved Beech; but the Plants which were raised from them, proved to be the common Sort, so that we know of no other Variety, excepting those with striped Leaves, which is accidental, and when the Trees are in Vigour, the Leaves become plain again.

This Tree is propagated by sowing the Mast; the Season for which is any Time from October to February, only observing to secure the Seeds from Vermin when early

early sowed; which, if carefully done, the sooner they are sown the better, after they are fully ripe: a small Spot of Ground will be sufficient for raising a great Number of these Trees from Seed, but you must be very careful to keep them clear from Weeds; and if the Plants come up very thick, you should not fail to draw out the strongest of them the Autumn following, that those left may have room to grow; so that if you husband a Seed Bed carefully, it will afford a three Years Draught of young Plants, which should be planted in a Nursery; and, if designed for Timber Trees, at three Feet Distance, Row from Row, and 18 Inches asunder in the Rows.

But if they are designed for Hedges (to which the Tree is very well adapted) the Distance need not be so great; two Feet Row from Row, and one Foot in the Rows will be sufficient. In this Nursery they may remain 2 or 3 Years, observing to clear them from Weeds, also to dig the Ground between the Roots, at least once a Year, that the tender Roots may better extend themselves each Way: But be careful not to cut or bruise their Roots, which is injurious to all young Trees; and never dig the Ground in Summer, when the Earth is hot and dry; which by letting in the Rays of the Sun to the Roots, is often the Destruction of young Trees.

This Tree will grow to a considerable Stature, though the Soil be stony and barren, also upon the Declivities of Hills, and chalky Mountains, where they will resist the Winds better than most other Trees; but the Nurseries for the young Plants ought to be on the same Soil, for if they are raised in good Soil and a warm Exposure, and afterwards transplanted into a bleak barren Situation, they seldom thrive, which holds true in most other Trees; therefore I would advise the Nursery to be made on the same Soil where the Plantation is intended, but of this see more under the Article *Nursery*.

The Tree is very proper to form large Hedges to surround Plantations, or large Wilderness Quarters; and may be kept in a regular Figure, if sheared twice a Year, especially if they shoot strong; in which Case, if they are neglected but a Season or two, it will be difficult to reduce them again. The Shade is very injurious to most Sorts of Plants which grow near it, but is generally believed to be very salubrious to human Bodies.

The Timber is of great Use to Turners for making Trenchers, Dishes, Trays, Buckets; and to the Joiner for Stools, Bedsteads, Coffins, &c. The Mast is very good to fat Swine and Deer; it also affords a sweet Oil, and bath in some Families supported Men with Bread.

This Tree delights in a chalky or stony Ground, where it generally grows very fast; and the Bark of the Trees in such Land, is clear and smooth; although the Timber is not so valuable as that of many other Trees, yet as it will thrive on such Soils and in such Situations where few better Trees will grow, the Planting of them should be encouraged especially as the Trees afford an agreeable Shade, and the Leaves make a fine Appearance in Summer, and continue green as long in Autumn as any of the deciduous Trees: Therefore in Parks, and other Plantations for Pleasure, this Tree deserves to be culti-

vated among those of the first Class, especially where the Soil is adapted to it.

The two Sorts with variegated Leaves may be propagated by budding or grafting them upon the common Beech, observing not to plant them in rich Earth; which will cause the Buds or Cyons to shoot vigorously, whereby the Leaves will become plain, which often happens to most variegated Plants.

FARINA FÆCUNDANS is the impregnating Meal or Dust on the *Apices* of Flowers; which, being conveyed into the *Uterus* or *Vasculum Seminale* of Plants, fecundates the Rudiments of the Seeds in the Ovary, which otherwise would decay and come to nothing. See *Generation of Plants*.

FEATHERFEW, or FEAVEFEW. See *Matricaria*.

FENCES. In hotter Climates than *England*, where they have not occasion for Walls to ripen their Fruit, their Gardens lie open, where they can have water, Fence and Prospects; or else they bound their Gardens with Groves, in which are Fountains, Walks, &c. which are much more pleasing to the Sight than a dead Wall: But in colder Countries, and in *England*, we are obliged to have Walls to shelter and ripen our Fruit, although they take away much from the pleasant Prospect of the Garden.

Since therefore we are under a Necessity to have Walls to secure our Gardens from the Injury of Winds, as well as for the Convenience of Partitions or Inclosures, and also to ripen our Fruit, Brick Walls are accounted the warmest and best for Fruit: And these Walls being built Pannel-ways, with Pillars at equal Distances, will save a great deal of Charge, in that the Walls may be built thinner, than if they were built plain without these Pannels, for then it would be necessary to built them thicker every where: And besides, these Pannels make the Walls look the handsomer.

Stone Walls are by some preferred to Brick, especially those of square hewn Stones; but where they are designed for Fruit, they should be faced with Brick. Those that are made of rough Stones, though they are very dry and warm, yet by Reason of their Unevenness, are inconvenient to nail Trees to, except Pieces of Timber be laid in them here and there for that Purpose.

But in large Gardens it is better to have the Prospect open to the Pleasure Garden, which should be surrounded with a Fosse, that from the Garden the adjacent Country may be viewed, but this depends upon the Situation of the Place; for if the Prospect from the Garden is not good, it had better be shut out from Sight by a Wall, or any other Fence; also, where a Garden lies near a populous Town, and the adjoining Grounds are open to the Inhabitants, if the Garden is open, there will be no walking there in good Weather, without being exposed to the View of all Passengers, which is very disagreeable.

Where these Fosses are made round a Garden which it situated in a Park, they are extremely proper; because hereby the Prospect of the Park will be obtained in the Garden, which renders these Gardens much more agreeable than those which are confined.

In making these Fosses there have been many Inventions;

tions; but upon the whole, I have not seen any which are in all Respects preferable to those which have an upright Wall next the Garden; which (where the Soil will admit of a deep Trench) should be 5 or 6 Feet high; and from the Foot of this Wall, the Ground on the Outside should rise with a gradual easy Slope to the Distance of 18 or 20 Feet; and where it can be allowed, if it slopes much farther, it will be easier and less perceptible; as a Ditch to the Eye, when viewed at a Distance. But if the Ground is naturally wet, so as not to admit of a deep Fosse, then, in order to make a Fence against Cattle, if the Wall be 4 Feet high, and slight Posts of 3 Feet high are placed just behind the Wall, with a small Chain carried on from Post to Post, no Cattle or Deer will ever attempt to jump against it, therefore it will be a secure Fence against them; and if these are painted of a dark Colour, they will not be discerned at a Distance; and the Chain will secure Persons walking in the Garden from tumbling over.

In such Places where no good Prospects can be obtained from a Garden, it is common to make the Inclosure of Park Paling; which, if well performed, will last many Years, and has a much better Appearance than a Wall: This Pale may be hid from the Sight within, by Plantations of Shrubs and Ever-greens; or there may be a quick Hedge planted within the Pale, which may be trained up, so as to be an excellent Fence by the Time the Pales begin to decay.

Some Persons make Stuckade Fences round their Gardens to keep out Cattle, &c. which, when well made, will answer the Purpose of a Fence; but this being very expensive, and not of very long Duration, has occasioned their not being more commonly in Use.

As to Fences round Parks, they are generally of Paling; which, if well made of Winter-fallen Oak, will last many Years; but a principal Thing to be observed in making these Pales is not to make them too heavy, for when they are so, their own Weight will cause them to decay; therefore the Pales should be cleft thin, and the Rails should be cut triangular, to prevent the Wet lodging upon them; and the Posts should be good, and not placed too far asunder. If these Things are observed, one of these Pales will last, with a little Care, upward of forty Years very well. The common Way of making these Fences is, to have every other Pale nine or ten Inches above the intermediate ones; so that the Fence may be six Feet and a Half high, which is enough for Fallow Deer; but where there are Red Deer, the Fence should be one Foot higher, otherwise they will leap over.

Some inclose their Parks with Brick Walls; and where Stone is cheap, the Walls are built with this Material; some with, and others without Mortar.

A Kitchen Garden, if rightly contrived, will contain Walling enough to afford a Supply of such Fruits as require the Assistance of Wall for any Family; and this Garden being situated on one Side, and quite out of Sight of the House, may be surrounded with Walls, which will screen the Kitchen Garden from the Sight of Persons in the Pleasure Garden; and being locked up, the Fruit will be much better preserved than it can be in the publick Garden: The having too great a Quantity of Walling is often the Occasion that so many scan-

dalous Trees are to be seen in large Gardens, where due Care is not observed in their Management.

And besides, the Borders of Pleasure Gardens are generally too narrow for the Roots of Fruit Trees, as will be shewn in its proper Place.

The Height of Garden Walls should be 12 Feet, which is a moderate Proportion; and if the Soil is good, it may in Time be well furnished with bearing Wood in every Part, especially that Part planted with Pears, notwithstanding the Branches being trained horizontally from the Bottom of the Walls.

I would recommend the White Thorn, Holly, Black Thorn, and Crab, for outward Fences to good Ground, but I do not approve of intermixing them.

The White Thorn is the best Quick to plant, because it is the most common, and may be clipped so as to render it the closest and hardiest Fence of any other Tree; and being very durable, is preferred to all others for outward Fences, or for the Division of Fields, where they are exposed to Cattle, &c.

The Black Thorn and Crab make very good Fences, and are to be raised as the White Thorn; but if the Kernels of Apples or Crabs be sown, it is best to sow the Pommace with them, and they will come up the sooner, *i. e.* the first Year.

If Crab Stocks be planted while young, in the same Manner as Quick, they make excellent Hedges, and so will some Sorts of Plums.

The Black Thorn is not accounted so good for Fences as the White Thorn, because it is apt to run more into the Ground, and is not certain as to growing, especially if the Plants are not set very young; but on the other Hand, the Bushes are by much the better, and are more lasting than the White, or any other, for dead Hedges, or to mend Gaps; nor are they subject to be cropt by Cattle. The richer the Mould is, the better they will prosper, yet they will grow on the same Sort of Soil that the White Thorn does.

The Holly makes an excellent Fence, and is preferable to all the rest; it is slow in Growth at the first, but when once it does grow, it makes Amends by its Height, Strength, and Thickness.

It is raised of Sets or Berries, as the White Thorn is, and will lie as long in the Ground before it comes up. It delights most in strong Grounds, but will grow upon the driest Gravel, amongst Rocks and Stones.

The Berries lie till the second Spring before they come, therefore they should be prepared before they are sown (for this see the Article *Aquifolium*). It will be best to sow them in the Place where you design they should grow, and they should be well weeded both before they come up, and afterwards.

French Furs will also do well upon dry sandy Banks, where few other Plants will grow; but they must be kept very clean at the Bottom, and cut thin, and never suffered to grow too high: Nor should they be cut in dry Weather, nor late in Autumn, nor early in the Spring; the doing either is apt to make it die in Patches, which is irrecoverable; nor will it ever break out again from old Wood, if cut close in, after it has been suffered long to grow out.

Fences may likewise be made of Elder: If the Soil be good, you may put Sticks of Elder, or Truncheons ten

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or twelve Feet long, flopeways in your Banks, so as to make Chequer Work; and they will make a Fence for a Garden the quickest of any Thing, and be a good Shelter. But these Fences are improper for a fine Garden, because they shoot very irregular, and are ungovernable; as likewise the Roots of these Trees spread very far, and draw away all the Heart of the Ground, so as to starve whatever Plants grow near them: Add to this, the scattering of the Berries, which will fill the Ground near them with young Plants; which, if not timely weeded out, will get the better of whatever grows near them; therefore this Sort of Fence is seldom planted, where a Hedge of White Thorn can be had.

Elder planted on a Bank, the Side of which is washed with a River or Stream, will make an extraordinary Fence, and will preserve the Bank from being undermined by the Water, because it is continually sending Suckers from the lower Roots, which is of great Advantage where the Stream washes away the Bank.

For middle Fences in a Garden, the Yew is the most tonsile, governable, and durable Plant.

For surrounding Wilderness Quarters, Elm, Lime, Hornbeam, and Beech, are very proper.

FENNEL. See *Foeniculum*.

FENNEL-FLOWER. See *Nigella*.

FERRARIA. *Burm.*

The Characters are,

The Flower is inclosed in a double Spatha, or Sheath, which is membranaceous and placed alternate; out of each Sheath is produced one Flower. The inner Sheath is shorter and oblique to the outer, which is longer and erect. The Flower has 6 oblong acute-pointed Petals, 3 of which are alternately larger than the other; the 3 smaller are raised and swelling in the Middle; their under Part is smooth and lucid; these seem to be joined at their Tails, and their Borders are fringed, turned backward, and silky; it has 3 Stamina which rise above the Petals, and are crowned by roundish Twin Summits, and a roundish three-cornered Germen situated under the Flower, supporting a single erect Style, crowned by a trifid Stigma which is hairy, and whose single Parts end in Threads. The Germen turns to an oblong smooth Capsule, pressed together below, but bellied above and 3 cornered, one Part being convex, and is crowned by the decayed Petals of the Flower; it has 3 Cells, and is wrapped in the permanent Sheath of the Flower; in each Cell is lodged many small round Seeds, fastened to the 3 cornered Column in the Center.

The Species are,

1. *FERRARIA foliis lanceolatis. Burm.* *Ferraria* with Spear-shaped Leaves. This is the *Flor Indicus à violaceo fusco, radicè tuberosa. Ferr. Flor. Cult.* Indian Flower of a tawny Violet Colour with a tube-rose Root.

2. *FERRARIA foliis ensiformibus. Burm.* *Ferraria* with Sword-shaped Leaves.

These Plants grow naturally at the Cape of Good Hope. The Root of the first Sort was sent me by Dr. Job Baster, of Zirkzee, who received it from the Cape of Good Hope. The Root is tuberous, roundish, and compressed, it is shaped like the Root of Indian Corn Flag, but is larger; in the Center of the upper Side of the Root there is a Hollow like a Navel, from whence the Flower Stalk comes out. The outer Cover is of a light brown Colour, and the Inside is white. The Stalk rises

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a Foot and a Half high, is round, as thick as a Man's little Finger, and is garnished with Leaves the whole Length, which are placed alternate, embrace the Stalks with their Base, and point upward. The lower Leaves are from 4 to 5 Inches long, and an Inch and a Half broad toward the Base ending in obtuse Points; they are smooth, a little Keel-shaped, and of a light green Colour. The upper Part of the Stalk divides into 2 or 3 Branches, closely garnished with Leaves of the same Shape with those below, but much shorter; each of the Branches is terminated by a Spatha or Sheath, which is at first of the same Colour with the Leaves, but when the Flower fades, this withers and dies, but remains upon the Stalk; these Sheaths are double, one within the other. The Flower rises out of the Top on a very short Foot Stalk; it has 6 oblong Petals, 3 of which are alternately larger than the other; they are finely fringed on their Edges, opening flat, and are reflexed at their Points; they are of a whitish green on their Outside, but of a tawny Violet within, having many silky Hairs on their Surface. In the Center of the Flower is situated an erect Style, which sits upon the Germen, and is crowned with 3 bifid Stigmas, which terminate in Hairs. On one Side the Style is situated 3 Stamina, which divide toward the Top, and are terminated by roundish Twin Summits. The Germen which is situated under the Flower, becomes an oblong smooth Capsule with 3 Cells, filled with roundish Seeds. It flowers in April, but the Seeds do not ripen here.

There is a great Singularity in the Root of this Plant, which is, that it vegetates but every other Year, and sometimes every third Year, the intermediate Time it remains unactive, though very sound and good.

The 2d Sort is figured by Dr. Burman; but I have not seen it in England; it differs from the former in having longer Leaves, which are Sword-shaped and furrowed, like those of Byzantine Corn Flag. The Stalk rises about the same Height, but does not divide so much; the Flowers are smaller, and the Petals not so much fringed.

These Plants are propagated by Seeds, when they can be procured from the Country where they naturally grow; these should be sown in Pots as soon as they arrive, and require the same Treatment as the *Ixia*. The Roots also send out Offsets, but sparingly in England, and these are some Years before they arrive to a Size for flowering, which occasions the Scarcity of these Plants in Europe. The Roots also require the same Culture with the *Ixia* and *Watsonia*, for they are too tender to live through the Winter in the open Air here; these must be planted in Pots filled with light loamy Earth, and sheltered under a Frame in Winter, as hath been before directed for *Watsonia* and *Ixia*, under which Articles the Reader will find proper Directions for their Culture; but those Years when the Roots do not vegetate, they should have very little Water, and in Summer the Pots should be placed where they may have only the Morning Sun, for if they are exposed to the Mid-day Sun, the Earth will dry too much, so may require Water often, which frequently rots the Roots when they are in an inactive State.

The Mice are very fond of these Roots, and will destroy them if not protected from those Vermin.

FERRUM EQUINUM. See *Hippocrepis*.

FERULA.

FERULA. Lin. Gen. Plant. 305. Tourn. Inst. R. H. 321. Tab. 170. Fennel Giant; in French, *Ferule*.

The Characters are,

It hath an umbellated Flower; the principal Umbel is globular, and composed of several smaller called Rays, of the same Form; the Involucrum is composed of several narrow Leaves, which fall off; the principal Umbel is uniform. The Flowers have 5 oblong erect Petals which are equal, and 5 Stamina of the same Length, terminated by single Summits; under the Flower is situated a turbinated Germen, supporting 2 reflexed Styles, crowned by obtuse Stigmas. The Germen afterward becomes an elliptical compressed plain Fruit, dividing in two Parts, each having a large elliptical plain Seed, marked with 3 Lines on each Side.

The Species are,

1. FERULA foliolis linearibus longissimis simplicibus. Hort. Cliff. 95. *Ferule* with the smaller Leaves very narrow, long, and single. This is the *Ferule major*, seu *fœmina* Plinii. M. Umb. Pliny's Female Fennel Giant.

2. FERULA foliolis multipartitis, laciniis linearibus planis. Hort. Cliff. 95. *Ferule* whose smaller Leaves are divided into many narrow Parts which are plain. This is the *Ferule galbanifera*. Lob. Obs. Galbanum-bearing Fennel Giant.

3. FERULA foliolis laciniatis, lacinulis tridentatis inæqualibus. Hort. Cliff. 95. *Ferule* whose smaller Leaves are cut, and Segments ending in three unequal Parts. This is the *Ferule Tingitana*, folio latissimo lucido. H. Edin. Broad-leaved shining Fennel Giant from Tangier.

4. FERULA foliis pinnatifidis, pinnis linearibus planis trifidis. H. C. 95. *Ferule* with Wing-pointed Leaves, whose Pinnæ are narrow, plain, and trifid. *Ferule latiore folio*. Mor. Hist. Fennel Giant with a broader Leaf.

5. FERULA foliorum pinnis basi nudis, foliolis setaceis. H. C. 95. *Ferule* with the Wings of the Leaves naked at the Base, and the smaller Leaves bristly. *Ferule Orientalis*, Cachrys folio & facie. Tourn. Eastern Fennel Giant, with the Leaf and Appearance of *Cachrys*.

6. FERULA foliorum pinnis utrinque basi acutis, foliolis setaceis. H. C. 95. *Ferule* with the Wings of the Leaves pointed at their Base on every Side. This is the *Laserpitium Orientale* Mei folio, flore luteo. Tourn. Eastern Laserwort with a Spiguel Leaf and yellow Flower.

7. FERULA foliolis appendiculatis, umbellis subsessilibus. Lin. Sp. Plant. 247. *Ferule* with Appendages to the smaller Leaves, and Umbels sitting close to the Stalks. This is the *Libanotis ferule folio & semine*. C. B. P. 158. *Libanotis* with a Fennel Giant Leaf and Seed.

8. FERULA foliis pinnatifidis, pinnis linearibus planis brevioribus. *Ferule* with Wing-pointed Leaves, whose innæ are narrow, plain, and short. *Ferule tenuiore folio*. Tourn. Inst. Fennel Giant with a narrower Leaf.

The 1st of these Plants is common in the English Gardens: This, if planted in a good Soil, will grow to the Height of 10 or 12 Feet and divides into many Branches: The lower Leaves of this Sort spread more than 2 Feet every Way; these branch out into many Divisions, which are again subdivided into many smaller, and are garnished with very long narrow small Leaves that are single; they are of a lucid green, and spread near the Ground. From the Center of the Plant comes out the Flower Stalk, which, when the Plants are strong, will be near as large as a common Broomstick, and will rise

10 or 12 Feet, having many Joints; if the Stalks are cut, there issues from the Vessels a foetid yellowish Liquor, which will concrete on the Surface of the Wound. The Stalks are terminated by large Umbels of yellow Flowers, which come out the latter End of June, or Beginning of July; these are succeeded by oval compressed Seeds, which have 3 Lines running longitudinally on each Side. These ripen in September, and the Stalks decay soon after. When the Stalks are dry, they are full of a light dry Pith, which will soon take Fire.

Mr. Ray says, the People of Sicily use the Pith of this Plant for Tinder to light their Fires; if this was practised by the Ancients, we may easily guess why the Poets feigned, that *Prometheus* stole Fire from Heaven, and carried it to the Earth in a hollow *Ferule*.

The Leaves decay soon after the Seeds are formed, so that before they are ripe, there are seldom any Leaves remaining, and the Stalks afterward dry and become very tough; so it is not unlikely these may have been used for Correction in the Schools, as they are very light, and cannot do much Injury. The Roots of this Sort will continue several Years, especially on a dry Soil, and will annually produce Flowers and Seeds.

The 2d Sort doth not grow quite so large as the first, but the Stalks of this will rise 7 or 8 Feet high; the lower Leaves are large, and greatly divided; the small Leaves are flat, not so long as those of the former, and are of a lucid green Colour; the Umbels of Flowers are smaller, and the Seeds are less. This flowers and ripens its Seeds about the same Time as the former Sort.

The 3d Sort hath large spreading Leaves near the Root, which are divided and subdivided into many Parts; the small Leaves are much broader than in any of the other Sorts, and these are divided at their End into 3 unequal Segments; these Leaves are of a very lucid green; the Stalks are strong, rise to the Height of 8 or 10 Feet, and are terminated by large Umbels of yellow Flowers, which are succeeded by large oval compressed Seeds like those of the first Sort. This flowers and ripens its Seeds about the same Time as the former Sort, it grows naturally in Spain and Barbary.

The 4th Sort grows much the same Height as the 2d; the Leaves of this branch out on every Side pretty wide, and the smaller Leaves on the Divisions of the Leaves, are broader than those of the others (excepting the 3d), but they are longer than those, and of a darker green Colour, ending in 3 Points. The Umbels of Flowers are large, the Flowers yellow, and are succeeded by oval compressed Seeds, like those of the other Species. This grows naturally in Sicily.

The 5th Sort is of much humbler Growth; the Stalks seldom rise more than 3 Feet high; the lower Leaves branch into many Divisions, which are closely garnished with very fine bristly Leaves; the Umbel of Flowers is but small, compared with the others, and the Seeds are smaller. It grows naturally in the Levant.

The 6th Sort hath very branching Leaves, the Foot Stalks are angular and channelled; this sends out at every Joint 2 Side Branches opposite; those toward the Bottom are 9 or 10 Inches long, and the others diminish gradually to the Top; these Side Branches send out smaller at each Joint in the same Manner, and are garnished with very fine Leaves like those of Spiguel, which stand quite

round the Stalks in Shape of Whorls; the Flower Stalks grow 3 Feet high, having a pretty large Umbel of yellow Flowers at Top; these are succeeded by oval flat Seeds, which ripen in the Autumn. It grows naturally in the *Levant*.

The 7th Sort rises about 3 Feet high; the Leaves are much divided, and the small Leaves on the Divisions are very narrow and entire; the Umbels of Flowers are small, and are situated close to the Stalks between the Leaves at the Joints; they are like those of the other Sorts. It grows naturally in *Istria* and *Carniola*.

The 8th Sort is like the 2d, but the small Leaves are much broader; the large Leaves not so long, and the Stalk grows taller, but in other Respects agrees with that. It grows naturally in *Spain*.

All these Sorts have perennial Roots, which continue several Years; these have thick strong Fibres, which run deep in the Ground, and divide into many smaller, spreading to a Distance every Way: The Stalks are annual, and decay soon after they have perfected Seeds. As these Plants spread very wide, they should have each 4 or 5 Feet Room; nor should they stand near other Plants, for their Roots will rob them of their Nourishment.

They are all propagated by Seeds, which should be sown in Autumn; for if they are kept out of the Ground till Spring, they frequently fail, and those which succeed remain a Year in the Ground, so much Time is lost. The Seeds may be sown in Drills, by which Method the Ground may be easier kept clean; they must not be nearer than a Foot Row from Row, and the Seeds may be scattered 2 or 3 Inches asunder in the Drills; when the Plants come up, they must be kept clean from Weeds; and if they should be too close together, they should be thinned, to allow them room to grow, for they will not be strong enough to remove till they have had 2 Years Growth; in Autumn so soon as their Leaves decay, the Roots should be taken up with great Care, so as not to cut or injure the Tap or downright Root, and then planted where they are designed to remain, for after this transplanting they should not be removed. They delight in a soft, gentle, loamy Soil, not too wet, and are rarely injured by the hardest Frost.

FICOIDES. See *Mesembryanthemum*.

FICUS. *Lin. Gen. Plant.* 1032. *Tourn. Inst. R. H.* 662. *Tab.* 420. The Fig Tree; in French, *Figuier*.

The Characters are,

It hath male and female Flowers, which are included within the Covering, or Skin of the Fruit; so do not appear unless the Covering is opened; the male Flowers are but few in Number, and are situated in the upper Part of the Fruit; the female Flowers are numerous, and situated in the lower Part. The male Flowers sit each upon a separate Foot Stalk, and have an Empalement divided into 3 Parts; they have no Petals, but 3 bristly Stamens as long as the Empalement, terminated by twin Summits; the female Flowers sit upon distinct Foot Stalks; their Empalements are divided into 5 Parts; they have no Petals, but a Germen as the Empalement, supporting an inflexed Style, crowned by two reflexed pointed Stigmas. The Germen afterward becomes a large Seed, sitting in the Empalement.

The Species are,

1. *Ficus foliis palmatis.* *Hort. Cliff.* 471. Fig Tree

with Hand-shaped Leaves. This is the *Ficus communis* *C. B. P.* 457. The common Fig Tree.

2. *Ficus foliis cordatis subrotundis integerrimis.* *Hort. Cliff.* 471. Fig Tree with roundish Heart-shaped Leaves, which are entire. This is the *Ficus folio mori, fructum in caudice ferens.* *C. B. P.* 459. Fig Tree with a Mulberry Leaf, bearing Fruit on the Body or Stem, commonly called Sycamore.

3. *Ficus foliis cordatis integerrimis acuminatis.* *Hort. Cliff.* 471. Fig Tree with entire Heart-shaped Leaves, ending in acute Points. This is the *Ficus Malabariensis, folio cuspidato, fructu rotundo parvo gemino.* *Pluk. Alm.* 144. Malabar Fig with a long pointed Leaf, and small double round Fruit.

4. *Ficus foliis ovatis integerrimis obtusis, caule inferne radicato.* *Hort. Cliff.* 471. Fig Tree with oval, obtuse, entire Leaves, and the lower Part of the Stalk putting out Roots. This is the *Ficus Benghalensis, folio subrotundo, fructu orbiculato.* *Hort. Amst.* 1. p. 119. Bengal Fig with a roundish Leaf and orbicular Fruit.

5. *Ficus foliis lanceolatis petiolatis, pedunculis aggregatis, ramis radicanibus.* *Lin. Sp. Pl.* 1060. Fig Tree with Spear-shaped Leaves having Petals, the Foot Stalks of the Fruit growing in Clusters, and Branches sending out Roots. This is the *Ficus Indica Tbeophrasti.* *Tabern. Hist.* 1370. Indian Fig of *Tbeophrastus*.

6. *Ficus foliis lanceolatis integerrimis.* *Hort. Cliff.* 471. Fig Tree with entire Spear-shaped Leaves. This is the *Ficus Indica maxima, folio oblongo, funiculis summis ramis dimissis radices agentibus se propagans, fructu minori sphaerico sanguineo.* *Sloan. Cat. Jam.* 189. The largest Indian Fig with an oblong Leaf, sending out Roots from the Tops of the Branches, and a small spherical Blood-coloured Fruit.

7. *Ficus foliis ovatis acutis integerrimis, caule arboreo, fructu racemoso.* *Lin. Sp. Pl.* 1060. Fig Tree with oval, entire, acute Leaves, a Tree-like Stalk, and branching Fruit. This is the *Alty-aly.* *Hort. Mal.*

8. *Ficus foliis ovatis acutis integerrimis, caule repente.* *Lin. Sp. Pl.* 1060. *Amæn. Acad.* Fig Tree with oval, acute, entire Leaves, and a creeping Stalk. This is the *Ficus sylvestris procumbens, folio simplici.* *Kæmpf. Amæn.* 803. Trailing wild Fig Tree having single Leaves.

9. *Ficus foliis ovato cordatis integerrimis glabris.* Fig Tree with oval, Heart-shaped, entire, smooth Leaves, vulgarly called *Ficus nymphaeæ folio.* Fig Tree with a Water Lily Leaf.

10. *Ficus foliis oblongo-cordatis acuminatis, petiolis longissimis.* Fig Tree with oblong, Heart-shaped, pointed Leaves, and very long Foot Stalks. This is the *Ficus citrii folio, fructu parvo purpureo.* *Catesb. Hist. Carol.* Fig Tree with a Citron Leaf, and small purple Fruit.

11. *Ficus foliis ovatis integerrimis obtusis, oppositis, fructu globoso calyculato.* Fig Tree with oval, obtuse, entire Leaves placed opposite, and a globular Fruit having a Calyx. This is the *Ficus folio lato subrotundo, fructu globoso, magnitudine nucis moschatae.* *Houft. Mff.* Fig Tree with broad roundish Leaves, and a globular Fruit about the Bigness of a Nutmeg.

The 1st Sort, which is the Fig, whose Fruit is valuable, is cultivated in most Parts of Europe; of this there are great Varieties in the warm Countries, which have been obtained from Seeds, therefore may be increased

creased annually, if the Inhabitants were careful in propagating the Trees, from the Seeds of their best Sorts. In *England* we had not more than four or five Sorts till within a few Years past, for as the Generality of the *English* were not Lovers of this Fruit, so there were few who troubled themselves with the Culture of it. But some Years past I had a large Collection of these Trees sent me from *Venice*, by my honoured Friend the Chevalier *Rathgeb*, which I planted and preserved to taste of their Fruits, several of which proved excellent; these I have preserved and propagated, and those whose Fruit were inferior, have been neglected. As the Variety of them is very great, I shall here mention only such of them as are the best worth cultivating, placing them in the Order of their ripening.

1. The Brown or Chestnut-coloured *Ischia* Fig. This is the largest Fruit of any I have yet seen, it is short, globular, with a pretty large Eye, pinched in near the Foot Stalk, of a brown or Chestnut Colour on the Outside, and purple within; the Grains are large, and the Pulp sweet and high flavoured; this Sort very often bursts open when it ripens. It ripens the latter End of *July*, or the Beginning of *August*. I have had this Fruit ripen well on Standards, in a warm Soil. If this Sort is planted against hot Walls, two plentiful Crops of Fruit may be annually ripened.

2. The Black *Genoa* Fig. This is a long Fruit, which swells pretty large at the Top where it is obtuse, but the lower Part is very slender toward the Stalk; the Skin is of a dark purple Colour, almost black, and hath a purple Farina over it like that on some Plums; the Inside is of a bright red, and the Flesh is very high flavoured. It ripens early in *August*.

3. The small White early Fig. This hath a roundish Fruit, a little flattened at the Crown, with a very short Foot Stalk; the Skin, when fully ripe, is of a pale yellowish white Colour; the Skin is thin, the Inside white, and the Flesh sweet, but not high flavoured. This ripens in *August*.

4. The large white *Genoa* Fig. This is a large globular Fruit, a little lengthened toward the Stalk; the Skin is thin, of a yellowish Colour when fully ripe, and red within. This is a good Fruit, but the Trees are not good Bearers.

5. The Black *Ischia* Fig. This is a short Fruit, of a middling Size, a little flattened at the Crown; the Skin is almost black when ripe, and the Inside is of a deep red, the Flesh is very high flavoured, and the Trees produce a good Crop of Fruit, but the Birds are great Devourers of them, if they are not protected from them. This ripens in *August*.

6. The *Malta* Fig. This is a small brown Fruit, much compressed at the Top, and greatly pinched toward the Foot Stalk; the Skin is of a pale brown Colour, as is also the Inside, the Flesh is very sweet, and well flavoured. If this Sort is permitted to hang upon the Trees till the Fruit is shriveled, it becomes a fine Sweetmeat.

7. The Murrey, or Brown *Naples* Fig. This is a pretty large globular Fruit, of a light brown Colour on the Outside, with some faint Marks of a dirty white, the Inside is nearly of the same Colour, the Grains are

pretty large, and the Flesh is well flavoured. It ripens the latter End of *August*.

8. The Green *Ischia* Fig. This is an oblong Fruit, almost globular at the Crown; the Skin is thin, of a green Colour, but when it is fully ripe, it is stained through by the Pulp to a brownish Cast; the Inside is purple, and will stain Linen, or Paper; the Flesh is high flavoured, especially in warm Seasons. It ripens toward the End of *August*.

9. The *Madonna* Fig, commonly called here the *Brunswick*, or *Hanover* Fig, is a long pyramidal Fruit of a large Size; the Skin is brown; the Flesh is of a lighter brown Colour, coarse, and hath little Flavour. This ripens the End of *August* and the Beginning of *September*; the Leaves of this Sort are much more divided than of most other.

10. The common Blue, or Purple Fig, is so well known, as to need no Description.

11. The long brown *Naples* Fig. The Leaves of this Tree are deeply divided. The Fruit is long, somewhat compressed at the Crown. The Foot Stalks are pretty long; the Skin of a dark brown when fully ripe, the Flesh inclining to red; the Grains are large, and the Flesh well flavoured. It ripens in *September*.

12. The Yellow *Ischia* Fig. This is a large Fruit, of a pyramidal Form; the Skin is yellow when ripe, and the Flesh is purple and well flavoured, but the Trees do not produce much Fruit here; they grow very luxuriant in Branches, the Leaves are very large, and not much divided. This ripens in *September*.

13. The small Brown *Ischia* Fig. This is a small pyramidal Fruit with a short Foot Stalk; the Skin is of a light brown, the Flesh inclining to purple, of a very high Flavour; it ripens late in *September*; the Leaves of this Tree are less divided than any of the other Sorts. This is not a good Bearer.

14. The *Gentile* Fig. This is a middle sized globular Fruit; the Skin, when ripe, is yellow, the Flesh also inclines to the same Colour; the Grains are large, and the Flesh well flavoured, but it ripens very late, and the Trees are bad Bearers, so that it is not propagated much in *England*.

There are several other Sorts which have been lately introduced from *Italy*, but all which I have yet tasted, are inferior to those above-mentioned; some of them rarely ripen their Fruit, and others are very ill Bearers, so not worth propagating, therefore I have omitted mentioning them here; for as those which are enumerated, continue in Succession during the Season for these Fruits, and being preferable to the other, few Persons will care to fill their Gardens with a greater Variety of these Trees, than are of real Use, especially as they require good Walls, and much Room.

The 1st, 2d, 3d, 9th, and 10th Sorts, will ripen their Fruits on Standards, in a warm Situation; but the others require the Assistance of Walls exposed to good Aspects, otherwise their Fruit will not ripen in *England*.

Fig Trees generally thrive in all Soils, and in every Situation, but they produce a greater Quantity of Fruit on a strong loamy Soil, than on dry Ground; for if the Season proves dry in *May* and *June*, those Trees which grow upon very warm dry Ground, are subject to cast their

their Fruit; whenever this happens, such Trees should be well watered and mulched, which will prevent the Fruit from dropping; and the Fruit on these Trees are better flavoured than any of those which grow on cold moist Land. I have always observed those Fig Trees to bear the greatest Quantity of well-flavoured Fruit, which were growing upon chalky Land, where there has been a Foot or more of a gentle loamy Soil on the Top. They also love a free open Air, for although they will shoot and thrive very well in close Places, yet they seldom produce any Fruit in such Situations; and all those which are planted in small Gardens in London, will be well furnished with Leaves, but I never seen any Fruit upon them, which have grown to Maturity.

These Trees are planted as Standards, in all warm Countries, but in *England* they are generally planted against Walls, there being but few Standard Fig Trees, at present, in the *English* Gardens; however, since some of the Sorts are found to ripen their Fruit well upon the Standards, and the Crop of Figs is often greater upon them, than upon those Trees against Walls, it is worthy of our Care, to plant them either in Standards or Espaliers; the latter, I think, will succeed best in *England*, if they were managed as in *Germany*, where they untie the Fig Trees from the Espalier, and lay them down, covering them in Winter with Straw or Litter, which prevents their Shoots being injured by the Frost; and this Covering is taken away gradually in the Spring, and not wholly removed until all the Danger of Frost is over, by which Management they generally have a very great Crop of Figs, whereas in *England*, where the Trees grow against warm Walls, if the Spring proves warm, the young Figs are pushed out early, and the Cold, which frequently returns in *April* and *May*, causes the greatest Part of the Fruit to drop off; so that our Crop of Figs is generally more uncertain than most other Sorts of Fruit; and it frequently happens, that Trees planted against North and East aspect Walls, produce a greater Quantity of Fruit in *England*, than those which are planted against South and South East Aspects; which must happen from the latter putting out their Fruit so much earlier in Spring; and if there happen cold frosty Nights, after the Figs are come out, the forwardest of the Figs are generally so injured as to drop off from the Trees soon after. In *Italy*, and the other warm Countries, this first Crop of Figs is little regarded, being few in Number; for it is the 2d Crop which are produced from the Shoots of the same Year, which is their principal Crop, but these rarely ripen in *England*, nor are there above 3 or 4 Sorts which ever ripen their 2d Crop, let the Summer prove ever so good, therefore it is the first Crop which we must attend to in *England*; so that when these Trees are growing against the best aspect Walls, it will be a good Method to loosen them from the Wall in Autumn; and after having divested the Branches of all the latter Fruit, to lay the Branches down from the Wall, fastening them together in small Bundles, so that they may be tied to Stakes, to keep them from lying upon the Ground, the Damp whereof, when covered in frosty Weather, might cause them to grow mouldy, and hereby they will be secured from being broken by the Wind. When they are thus managed in Autumn, if the Win-

ter should prove very severe, the Branches may be easily covered with Peas Haulm, Straw, or any other light Covering, which will guard the tender Fruit bearing Branches from the Injury of Frost; and when the Weather is mild, the Covering must be removed, otherwise the Figs will come out too early, for the Intention of this Management is, to keep them as backward as possible; then in the Spring, when the Figs are beginning to push out, the Trees may be fastened up to the Wall again. By this Management I have seen very great Crops of Figs produced in two or three Places.

I have also seen great Crops of Figs in some particular Gardens, after very sharp Winters, when they have, in general, failed in other Places, by covering up the Trees with Reeds made into Pannels, and fixed up against the Walls.

In the Pruning of Fig Trees, the Branches must never be shortened, because the Fruit are all produced at the upper Part of the Shoots of the former Year, so, if these are cut off, there can be no Fruit expected, beside, the Branches are very apt to die after the Knife; so that when the Branches are too close together, the best Way is to cut out all the naked Branches quite to the Bottom, leaving those which are best furnished with lateral Branches at a proper Distance from each other, which should not be nearer than a Foot; and when they are well furnished with lateral Branches, if they are laid 4 or 5 Inches farther asunder, it will be better.

The best Season for pruning Fig Trees is in Autumn, because at that Time the Branches are not so full of Sap, so they will not bleed so much, as when they are pruned in Spring; at this Season, the Branches should be divested of all the autumnal Figs, and the sooner this is done, when the Leaves begin to fall off, the better will the young Shoots resist the Cold of the Winter. There are some Seasons so cold and moist, that the young Shoots of the Fig Trees will not harden, but are soft, and full of Juice; when this happens, there is little Hope of a Crop of Figs the succeeding Year, for the first Frost in Autumn will kill the upper Part of these Shoots, for a considerable Length downward; whenever this happens, it is the best Way to cut off all the decayed Part of the Shoots, which will prevent the Infection from destroying all the lower Part of the Branches; by this Method, I have seen a moderate Crop of Figs put out from the lower Part of the Shoots, where, if the Shoots had not been injured, there would have been no Fruit produced, because it is chiefly from the 4 or 5 uppermost Joints of the Shoots, that the Fruit comes out; and it is for this Reason, that as many of the short lateral Branches should be preserved as possible, those being the most productive of Fruit; for where the long strait Shoots are fastened up, there will be no Fruit, but at their Extremities, so that all the lower Part of the Trees will be naked, if there is not a particular Regard had to supply young Shoots in every Part of the Trees.

Those Trees which are laid down from the Espaliers, should not be fastened up again till the End of *March*, for the Reasons before given, and those against Walls may remain some Time longer; when the large Shoots of these are nailed up, if the small lateral Branches are thrust behind these, to keep them close to the Wall, it will

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will secure the young Figs from being injured by the Morning Frosts, and when this Danger is over, they may be brought forward to their natural Position again; during the Summer Season these Trees will require no other pruning, but to stop the Shoots in Spring, where lateral Branches are wanting, and as the Branches are often blown down by Wind, they should be immediately fastened up again, otherwise they will be in Danger of breaking, for the Leaves of these Trees being very large and stiff, the Wind has great Power on them, and where the Branches are not well secured, they are frequently torn down.

Those Trees which are planted against Espaliers may be protected from the Injury of Frost in the Spring, by placing Reeds on each Side the Espalier, which may be taken down every Day, and put up again at Night; but this need not be practised in warm Weather, but only at such Times as there are cold Winds, and frosty Mornings; and although there is some Trouble and Expence attending this Management, yet the plentiful Crop of Figs, which may be this way obtained, will sufficiently recompense for both; the best Way of making this Covering is to fasten the Reeds with Rope Yarn, in such a Manner, as that it may be rolled up like a Mat, so that the Whole may with great Facility be put up, or taken down; and if these Reeds are carefully rolled up, after the Season for using them is over, and put up in a dry Shed, they will last several Years.

There are several Persons who of late have planted Fig Trees in Standards, which have succeeded very well; this Practice was revived, by observing some old Standard Fig Trees in some Gardens, which had been growing many Years, and generally produced a much greater Plenty of Fruit than any of those Trees which were growing against warm Walls; indeed, these Standard Fig Trees are in much greater Danger of having their Branches killed by severe Frost, but in mild Winters they generally do better than those against Walls, so that where these Trees can be covered in very hard Winters, there will always be Plenty of Fruit, and these may be covered by fastening as many of the Branches together as can be conveniently brought into a Bundle, and winding some Haybands, Straw, Peas Haulm, or any such light Covering as can be readily procured, which in the Spring may be gradually taken off, so as not to expose the Shoots all at once to the open Air, and if there is some such light Covering laid round the Stems, and upon the Surface of the Ground about their Roots, it will more effectually secure them from the Danger of Frost, but when this is practised, great Care should be taken that no Mice or Rats harbour in this Covering, for these will eat off the Bark from their Shoots, and kill them; and I have often observed those Trees which were against Walls, have suffered greatly from these Vermin, by having many of their largest Branches dibarked near the Ground, which has absolutely killed them; and it is in the Winter that these Vermin do this Mischief to them, therefore they should be carefully watched at that Season.

The common blue and white Figs, which are the Sorts most generally cultivated in *England*, are not so proper to plant for Standards, as some others which have been lately introduced; for they are much tenderer, and are

often killed almost to the Root, when some of the other Sorts, which have been growing in the same Situation, have received very little Injury from the Frost; indeed the white Sort is generally a great Bearer, and the Fruit is very sweet, but to those Palates which are accustomed to Figs, that Sort is not much in Esteem, from its Want of Flavour; those which have succeeded best with me, are the first and third Sorts. Their Branches are rarely hurt by Frost in Winter, and their Fruit will always ripen well, for in favourable Seasons, many of these Sorts, which were growing against Walls, have ripened their second Crop of Fruit tolerably well. I have also planted many of these Sort of Fig Trees against North East and North West Aspects, some of those which were first planted, have produced a good Quantity of well tasted Fruit, which has encouraged me to plant many more of these Trees to the same Aspects, and to increase my Number of Standard Trees.

I am aware, that what I have here advanced, in relation to the Pruning and Dressing of Fig Trees, will be condemned by great Numbers of People, who will not give themselves Time to consider and examine the Reasons upon which I have founded this Practice, nor to make one single Experiment to try the Truth of it, as being vastly different from the general Practice of most Gardeners, who always imagine, that Fig Trees should never have much Pruning, or, at least, that they should always be suffered to grow very rude from the Wall, to some Distance. That by this Management I have often seen great Quantities of Fruit, I cannot deny, but then this has been only after mild Winters, for it is very certain, that in sharp Frosts few of these outside Shoots escape being greatly injured where they are not covered; whereas it rarely happens, that those Shoots which are closely nailed to the Wall in Autumn, or laid down and covered, suffer the least Damage, and the Fruits are always produced a Fortnight sooner upon these Branches, than they are upon those which grow from the Wall; but although the Trees which are suffered to grow rude from the Walls may produce a good Quantity of Fruit for a Year or two, yet afterward the Trees will only bear at the Ends of the Shoots, which will then be so far from the Wall, as to receive little Benefit from it, nor can the Trees be reduced again to any Regularity, without cutting away the greatest Number of their Branches, by which a Year or two will be lost, before they will come to bear again.

The Season for Pruning, which I have laid down, being vastly different from the common Practice and Opinion of most Gardeners, will also be objected against, but I am sure, if any one will make Trial of it, I doubt not his Experience will confirm what I have here advanced, for as one great Injury to this Tree proceeds from the too great Effusion of Sap at the wounded Parts, so by this Autumn Pruning this is prevented; at that Season, all the Parts of *European* Trees, which cast their Leaves, are less replete with Moisture than at any other Time of the Year, for by the long Continuance of the Summer's Heat, the Juices of Plants having been exhausted in the Nourishment and Augmentation of Wood, Leaves, Fruits, &c. and also great Quantities being evaporated by Perspiration, the Root not being able to send up a Supply equivalent to this great Consumption,

Consumption, the Branches must contain a much less Quantity of Sap than in the Spring, when it has had several Months Supply from the Root, which though but small in Proportion to what is sent up when the Heat is greater, yet there being little or no Waste, either by Perspiration or Augmentation, there must be a greater Quantity contained in the Branches, which also is easily to be observed, by breaking or cutting off a vigorous Branch of a Fig Tree at both Seasons (the Sap, being milky, may be readily discerned;) when that cut in Autumn shall be found to stop its bleeding in one Day's Time, or less, whereas that cut in Spring will often flow a Week or more, and the Wound will be proportionably longer before it heals.

Of late some of these Trees have been planted against Fire Walls, which have succeeded very well where properly managed, but where they have been kept too close, and drawn by Glasses, they have not produced much Fruit, therefore whenever this is practised, the Heat should not be too great, nor the Glasses, or other Covering kept too close, but at all Times, when the Weather is favourable, a good Share of free Air should be admitted; and if the Trees are young, that their Roots are not extended beyond the Reach of the Covering, they must be frequently watered when they begin to shew Fruit, otherwise it will drop off, but old Trees, whose Roots are extended to a great Distance, will only require to have their Branches now and then sprinkled over with Water. If these Trees are properly managed, the first Crop of Fruit will be greater than upon those which are exposed to the open Air, and will ripen six Weeks or two Months earlier, and a plentiful second Crop may also be obtained, which will ripen early in *September*, and sometimes in *August*, which is about the Season of their ripening in the warmer Parts of *Europe*; but the Fires should not be used to these Trees, till the Beginning of *February*, because when they are forced too early, the Weather is frequently too cold to admit a sufficient Quantity of fresh Air to set the Fruit, but the Covers should be put over the Trees a Month before, to prevent the Shoots from being injured by the Frost.

Fig Trees are propagated in *England*, either by the Suckers, which are sent out from their Roots, and by Layers made by laying down their Branches, which in one Year will put out Roots sufficient to be removed, or by planting Cuttings, which, if properly managed, will take Root; the first of these is a bad Method, because all those Trees which are raised from Suckers, are very subject to send out great Quantities of Suckers again from their Roots and the Branches of the Suckers are not so compact, as those of the Layers, but are fuller of Sap, so in greater Danger of being injured by the Frost; those Plants which are propagated by Layers, are the best, provided the Layers are made from the Branches of fruitful Trees, for those which are made from the Suckers, or Shoots, produced from old Stools, are very soft, and full of Sap, so are in Danger of suffering by the Frost, and these will shoot greatly into Wood, but will not be very fruitful; for, when Trees have acquired a vicious Habit while young, it is seldom they are ever brought to be fruitful afterward, therefore the Shoots which are laid down, should be such as are woody, compact, and well ripened, not young Shoots

full of Sap, whose Vessels are large and open. The best Time for laying down the Branches is in Autumn, and if the Winter should prove very severe, if they are covered with some old Tan, or any other Mulch, to keep the Frost from penetrating the Ground, it will be of great Service to them; by the Autumn following, these will be sufficiently rooted for removing, when they should be cut off from the old Plants, because at that Season the Branches are not so full of Sap as in the Spring, so will not bleed so much as when cut off in the Spring. If the Place is ready to receive them, the Layers should be transplanted in Autumn, where they are to remain, but if it is not, then the Layers may remain till the Spring, provided they are separated from the old Plants in Autumn. As these Plants do not bear transplanting well when they are large, so it is the better Way to plant them at first in the Places where they are to remain, and after they are planted, the Surface of the Ground about their Roots should be covered with Mulch to keep out the Frost, and if the Winter should prove very severe, it will be proper to cover the Branches with Reeds, Peas Haulm, Straw, or some other light Covering, which will prevent their tender Ends being killed by the Frost, which frequently happens where this Care is wanting.

The other Method of propagating these Trees, is by Cuttings, taken from the Trees in Autumn, for the Reason before given; these must be chosen from such Branches as are compact, whose Joints are near each other, and they should have a Part of the former Year's Wood at their Bottom, and the Top of each should be left entire, not shortened as is usually practised with other Cuttings; then they should be planted 8 or 9 Inches deep, in a Bed of loamy Earth, in a warm Situation, covering the Surface of the Ground, 3 or 4 Inches thick, with old Tanners Bark, to keep out the Frost, and in severe Frost their Tops covered with Straw, Peas Haulm, Fern, or other light Covering, to protect them from Frost, which should be removed in Spring, but the Tan may remain, for that will prevent the drying Winds of the Spring, and the Sun in Summer, from penetrating the Ground, so will be of great Use to secure the Cuttings from Injury; these Cuttings will be rooted sufficiently by the following Autumn, when they should be transplanted, and treated as the Layers.

If fruitful Branches of these Trees are cut off, and planted in Pots, or Tubs, filled with good Earth, and these are plunged into a good hot Bed of Tanners Bark in the Stove, they will put out Fruit early in the Spring, which will ripen the Middle of *May*.

We shall now return to the other Sorts of Figs, which grow naturally in warm Countries, but are preserved in the Gardens of the curious in collecting rare exotick Plants, for these do not bear eatable Fruit in their native Soil, but their Leaves being large and beautiful, the Plants make a pleasing Variety in the Stove.

The 2d Sort grows naturally in the *Levant*, where it becomes a large Tree, dividing into many Branches, which are garnished with Leaves shaped like those of the Mulberry, so affords a friendly Shade in those hot Countries. The Fruit is produced from the Trunk and large Branches of the Tree, and not on the smaller Shoots,

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Shoots, as in most other Trees; the Shape is like the common Fig, but is little esteemed. This is called the Sycamore, or *Pharaob's Fig Tree*.

The 3d Sort grows naturally in *India*, where it is sacred, so that none dare destroy them, it is called by some the *Indian God's Tree*; this rises with a woody Stem to a great Height, sending out many slender Branches, which are garnished with smooth Heart-shaped Leaves, ending in a long Tail, or Point; they are entire, smooth, and of a light green, having pretty long Foot Stalks; they are between 6 and 7 Inches long, and three and a Half broad toward their Base, diminishing gradually to the Top, where they run out in a narrow Point, an Inch and a Half long. The Fruit comes out on the Branches, they are small, round, and of no Value.

The 4th Sort rises with many Stalks, which grow to the Height of 30 or 40 Feet, dividing into a great Number of Branches, which send out Roots from their under Side, many of which reach to the Ground, so that in such Places where these Trees grow naturally, their Roots and Branches are so interwoven with each other, as to render the Places impassible. In *India* the *Banyans* trail the Branches of these Trees into regular Archades, and set up their Pagods under them, these being the Places of their Devotion. In *America*, they are equally plenty, and form such Thickets, as neither Man or Beast can pass through. The Leaves are of a thick Substance, smooth, and oval, six Inches long, and four broad, with obtuse Ends. The Fruit is the Size of a Marble, and round, but of no Use.

The 5th Sort grows naturally in both *Indies*; this rises with a woody Stalk, to the Height of 30 Feet, sending out many Branches, which are garnished with oblong Leaves, standing upon pretty long Foot Stalks; they are about six Inches long, and four broad, ending in an obtuse Point, of a dark green, and smooth on their upper Side, but of a light green, and veined on their under Side. The Fruit is small, and of no Value. The Branches send out Roots from their lower Side, which sometimes reach the Ground.

The 6th Sort grows naturally in the *West-Indies*, where it rises 30 or 40 Feet high, sending out many slender Branches, which put out Roots as the former. The Leaves are 8 or 9 Inches long, and two broad, ending in Points. The Fruit is small, round, and of a blood Colour when ripe, but is not eatable.

The 7th Sort grows naturally in *India*, where it rises 25 Feet, and divides into many Branches, garnished with oval pointed Leaves, smooth, and of a lucid green. The Fruit is small, and grows in Clusters from the Side of the Branches; these are not eatable.

The 8th Sort grows naturally in *India*; this is a low trailing Shrub, whose Stalks put out Roots at their Joints, which strike into the Ground, so is propagated plentifully. The Leaves are two Inches and a Half long, and near two Inches broad, ending in Points; they are of a lucid green, and are placed without Order on the Branches; the Fruit is small, and not eatable.

The 9th Sort rises with a strong, upright, woody Stalk, 20 Feet high, sending out several Side Branches, garnished with large, oval, stiff Leaves, about 14 Inches

long, near a Foot broad, and rounded at the Ends; they have several transverse Veins, from the Midrib to the Sides. The Foot Stalks are long, and frequently are turned next to the Branches; the upper Side of the Leaves are of a lucid green, the under of a grey, or Sea-green Colour, of a thick Substance, and very smooth; this grows naturally in *India*, from whence it was brought to the Gardens in *Holland*.

The 10th Sort grows naturally in the *West-Indies*, where it rises 20 Feet high, sending out many Side Branches, covered with a white Bark, and garnished with oblong Heart-shaped Leaves, ending in acute Points; they are about three Inches long, and one and a Half broad, near the Base, of a lucid green on their upper Side, but of a pale green on their under, standing on very long Foot Stalks. The Fruit comes out from the Side of the Branches, toward their Ends; they are about the Size of large gray Peas, and of a deep purple Colour, sitting close to the Branches; these are not eatable.

The 11th Sort grows naturally at *La Vera Cruz*; this rises with many shrubby Stalks, 12 or 14 Feet high, and divide into many smaller Branches, garnished with oval stiff Leaves, which are obtuse; they are 4 Inches long, and 3 broad, of a light green, and stand on very short Foot Stalks, which are joined to a Cup, in which the Fruit sits; this is globular, and the Size of a middling Nutmeg, of a deep yellow, when ripe, but is not eatable.

The 2d Sort, I believe, is not in *England* at present, I raised two or three of these Plants from Seeds in the Year 1736, which were destroyed by the severe Frost in 1740, since which Time I have not been able to procure any of the Seeds. The other Sorts are preserved in several curious Gardens; they are easily propagated by Cuttings during the Summer Season. When the Cuttings are taken from the Plants, they should be laid in a dry shady Place for two or three Days, that the Wounds may be healed over, otherwise they are apt to rot; for all these Plants abound with a milky Juice, which flows out whenever they are wounded, for which Reason the Cuttings should have their wounded Part healed over and hardened before they are planted; after which they should be planted in Pots filled with sandy light Earth, and plunged into a moderate hot Bed, where they should be shaded from the Sun, and two or three Times a Week gently refreshed with Water, if the Season is warm, but they must not have too much Moisture, for that will infallibly destroy them. When the Cuttings have taken Root sufficient to transplant, they should be each planted into a separate small Pot filled with light undunged Earth, and plunged into the hot Bed again, being careful to shade them until they have taken fresh Root, then they should have a large Share of free Air admitted at all Times, when the Weather is favourable, to prevent their drawing up weak, and to give them Strength before the Cold comes on. In Autumn the Pots should be removed into the Stove, and plunged into the Tan Bed, where they should constantly remain, and must be treated as other tender Plants from the same Countries; for although two or three Sorts may be treated in a hardier Manner, yet they will not make much Progress.

FICUS INDICA. See Opuntia.

FILAGO. There are several Species of this Genus, some of which grow naturally upon barren Land in most Parts of England. They are called by some Cottonweed, by others Cudweed, their Leaves being white, and, when broken, have cottony Threads. These have been ranged under the Genus of *Gnaphalium* by most Botanists, and one of the Species which is used in Medicine, stands in the List of Simples by that Name. As these Plants are not cultivated in Gardens, I shall not trouble the Reader with a farther Account of them.

FILBERT. See Corylus.

FILIPENDULA. See Spiraea.

FILIUS ANTE PATREM [*i. e.* the Son before the Father;] an Expression which Botanists apply to Plants, whose Flowers come out before their Leaves; or those Plants which send forth Side Branches of Flowers, which advance above the Middle.

FILIX, Fern. There are great Varieties of this Plant in different Parts of the World, but particularly in America, as may be seen in the *Natural History of Jamaica*, by Sir Hans Sloane, Bart. and in *Plumier's American Ferns*: But as they are Plants seldom propagated in Gardens, I shall pass them over in this Place.

FILM, that woody Skin which separates the Seeds in the Pods of Plants.

FIMBRIATED [of *Fimbria*, Lat. a Fringe.] a Term relating to the Leaves of Plants, when they are jagged on the Edges, having, as it were, a Fringe about them; these are often called furbelowed Leaves.

FIR TREE. See Abies.

FISTULAR FLOWERS [*Flores Fistulares*, of *Fistula*, Lat. a Pipe,] such as are compounded of many long, hollow, small Flowers, like Pipes.

FLESH, among Botanists, is all the Substance of any Fruit that is between the outer Rind and the Stone, or that Part of any Root that is fit to be eaten.

FLORIFEROUS [*florifer*, Lat.] bearing Flowers.

FLORIST, one who is conversant with, or skilled in Flowers.

FLORULENT, FLORULOUS [*florulentus florulus*, Lat.] Flowery, full of Flowers; also Blossoming.

FLOWER: a Flower is a natural Production which precedes the Fruit, which includes the Grain or Seed. Though a Flower is a Thing so well known, yet the Definition of this Part of a Plant is as various almost as the Authors who define it. *Jungius* defines it to be the more tender Part of a Plant, remarkable for its Colour, or Form, or both, cohering with the Fruit. Yet this Author himself confesses, that this Definition is too narrow; for some of those Bodies which he allows to be Flowers, are remote from the Fruit.

Mr. Ray says, it coheres, for the most Part, with the Rudiments of the Fruit. Thus the Words for the most Part are hardly to be admitted into Definitions.

In my Opinion, Dr. Martyn has been happier, in his Definition: He defines a Flower to be the Organs of Generation of both Sexes adbering to a common Placenta, together with their common Coverings; or of either Sex separately, with its proper Coverings if it have any.

For the Parts of a Flower, See the Explanation of the Technical Terms of Botany, after the Preface.

Flowers, according to the Number of their Petals, are called Monopetalous, Dipetalous, Tripetalous, Tetrapetalous, &c.

The Structure of Flowers is indeed very various; but, according to Dr. Grew, the Generality have these three Parts in common, viz. the *Empalement*, the *Foliation*, and the *Attire*.

Mr. Ray reckons, that every perfect Flower has the *Petals*, *Stamina*, *Apices*, and *Stylus* or *Pistil*; and such as want any of these Parts, he accounts imperfect Flowers.

In most Plants there is a *Periantbium*, *Calyx*, or *Flower Cup*; which is of a stronger Consistence than the Flower itself, and designed to strengthen or preserve it.

Flowers are distinguished into *Male*, *Female*, or *Hermaphrodite*.

The male Flowers are those in which are the *Stamina*, but have no Germen or Style, the same which Botanists call stameneous Flowers; these have no Fruit.

The femal Flowers, are such as contain the Germen and Style, or Pistil, which is succeeded with Fruit, and are called fruitful, or knitting Flowers.

The hermaphrodite Flowers are such in whom the two Sexes are contained, *i. e.* the male and female Parts are found in the same Flower, which are the most general Kind; such as the Daffodil, Lilly, Tulip, Althæa, Geranium, Rosemary, Sage, Thyme.

The Structure of Parts is much the same in those where the Sexes are divided; the Difference between them consisting in this, that the *Stamina* and *Summits* or *Apices*, *i. e.* the male Parts in these are separate from the Styles or Pistils, being sometimes on the same Plants, and sometimes on different ones.

Among the Plants which bear both male and female Parts, but at a Distance from each other, are reckoned the Cucumber, Melon, Gourd, Turkey Wheat, Walnut, Oak, Beech, &c.

FOENICULUM. Tourn. Inst. R. H. *Anethum*. Lin. Gen. Plant. 326. Fennel; in French, *Fenouil*.

The Characters are,

It hath an umbellated Flower; the great Umbel is composed of many smaller, which have no Involucrum; the Umbel is uniform; the Flowers have five incurved Petals, and five Stamina terminated by roundish Summits: The Germen is situated under the Flower, supporting two small Styles, crowned by roundish Stigmas. The Germen afterwards turns to an oblong Fruit, deeply channeled, dividing into two Parts, each containing a single Seed, flat on one Side, but convex and channeled on the other.

The Species are,

1. **FOENICULUM foliis decompositis, foliolis brevioribus multifidis, semine breviori.** Fennel with decomposed Leaves, whose small Leaves are shorter and end in many Points, and a shorter Seed. This is the *Foeniculum vulgare Germanicum*. C. B. P. 147. Common Fennel.

2. **FOENICULUM foliis decompositis, foliolis longioribus semine longiori.** Fennel with decomposed Leaves, whose small Leaves are very long, and a longer Seed. This is the *Foeniculum dulce, majore & albo semine*. J. B. 3. p. 2, 4. Sweet Fennel having a larger white Seed.

3. **FOENI-**

3. *FOENICULUM humiliss, radice caulescente carnosio, seminibus recurvis, radice annua.* Dwarf Fennel with a fleshy Stalk, recurved Seeds, and an annual Root. This is the *Foeniculum dulce Azoricum*. Pluk. Alm. Sweet Azorian Fennel called *Finocchio*.

The 1st Sort is the common Fennel cultivated in Gardens, and has sown itself in many Places, where it has been introduced in such Plenty, as to appear as if it were a Native in *England*; but it is no where found at a great Distance from Gardens, so has been undoubtedly brought into *England*. There are two Varieties of this, one with light green Leaves, and the other with very dark Leaves, but these I believe are only Varieties which arise from the same Seeds; but this is very difficult to ascertain, for unless the Seeds were sown separately in some Place where neither of these Plants have been growing before, it cannot be done; for the Seeds of these Plants which have scattered, will remain in the Ground some Years, and when exposed near the Surface will grow; so frequently come up where the other Seeds are sown, and thereby the two Sorts may accidentally mix.

The common Fennel is so well known, as to need no Description. This hath a strong fleshy Root which penetrates deep into the Ground, and continues several Years. It flowers in *July*, and the Seeds ripen in Autumn. The best Time to sow them, is soon after they are ripe; the Plants will come up in the Spring, and require no other Care, but to keep them clean from Weeds, and thin the Plants where they are too close; it will grow in any Soil or Situation. The Leaves, Seeds, and Roots of this, are used in Medicine; the Root is one of the five opening Roots, and the Seed one of the greater carminative Seeds. There is a simple Water made from the Leaves, and a distilled Oil from the Seed.

The sweet Fennel has been by many supposed only a Variety of the common Sort, but I have cultivated it in the same Ground with that, where it has always retained its Differences. The Leaves of this are very long and slender, growing more sparsely, and do not end in so many Points as those of the common Sort; the Stalks do not rise so high, and the Seeds are longer, narrower, and of a lighter Colour. These Seeds are generally imported from *Germany* or *Italy*, and are by some preferred to those of the common Sort for Use, being much sweeter.

This may be propagated as the former Sort, being very hardy, but the Roots are not of so long Duration.

The 3d Sort is supposed to have been originally brought from the *Azorian Islands*; it has been long cultivated in *Italy* as a Salad Herb, under the Title of *Finocchio*; and there are some few Gardens in *England*, where it is now cultivated, but in small Quantities, for there are not many *English* Palates which relish it, nor is it easy to be furnished with good Seeds; those which are annually brought from *Italy*, seldom prove good, and it is difficult to save it in *England*, because the Winter frequently kills those Plants which are left for Seeds; and when any good Plants of the early Sowing are left for Seeds, they do not ripen, unless the Autumn proves very favourable.

This Sort hath very short Stalks, which swell just a-

bove the Surface of the Ground, to four or five Inches in Breadth, and almost two thick, being fleshy and tender: This is the Part which is eaten when blanched, with Oil, Vinegar, and Pepper, as a cold Salad. When these Plants are permitted to run for Seeds, the Stalks do not rise more than a Foot and a Half high, having a large spreading Umbel standing on the Top. The Seeds of this Sort are narrow, crooked, and of a bright yellow Colour; they have a very strong Smell like Aniseed, and are very sweet to the Taste.

The Manner of cultivating this Plant is as follows: Your first Care must be to procure some good Seeds from some Person who has been careful in the Choice of the Plants, otherwise there will be little Hope of having it good; for the Plants will run up to Seeds before they swell to any Size, so will not be fit for Use: Then make Choice of a good Spot of light rich Earth, not dry nor very wet, for in either Extreme this Plant will not thrive. The first Crop may be sown about a Fortnight in *March*, which, if it succeeds, will be fit for Use in *July*; and so by sowing at several Times, there may be a Supply for the Table till the Frost puts a Stop to it. After having well dug and levelled the Ground smooth, you should make a shallow Rill by a Line, into which you must scatter your Seeds pretty thin; for if your Plants are six Inches asunder in the Rows, it will be full near enough; but however, you must expect some of your Seeds to fail; and therefore you should scatter them about two Inches Distance, then cover the Seeds about half an Inch thick with Earth, laying it smooth: These Rills should be made 18 Inches asunder, or more, that there may be Room to clean the Ground, as also to earth up the Plants when they are full grown. When the Plants come up, which will be in about 3 Weeks or a Month after sowing, you must with a small Hoe cut up all the Weeds between them, and where the Plants are too close, they should be cut out to about 4 Inches Distance; and as they advance, and the Weeds spring again, they should, from Time to Time be hoed; and at the last Time of thinning them, they should be left 7 or 8 Inches asunder at least. If your Kind be good, the Stems of the Plants will increase to a considerable Bulk just above the Surface of the Ground; which Part should be earthed up in the Manner of Celery, to blanch, about a Fortnight before it is used, and this will cause it to be very tender and crisp.

Your second Crop should be sown about 3 Weeks after the first, and so continue sowing every 3 Weeks or a Month till the End of *July*, after which Time it will be too late for the Plants to come to any Perfection. But you should observe to sow in *April*, *May*, and *June*, on a moister Soil than that which you sowed the first on; as also what you sow in the latter Part of *July*, should be sown on a drier Soil, and in a warmer Situation; because this Crop will not be fit for Use till late in Autumn, and therefore will be subject to Injuries from too much wet or cold Weather, if on a moist Soil. But as the Ground is very often extreme dry in *June* and *July*, and the Seeds more apt to miscarry and not come up, you should therefore observe to water and shade the Beds where this Seed is sown at that Season, until the Plants come up. And if the Season should prove dry, the Plants must be duly watered,

otherwise they will run up to Seed before they are of any Size; therefore there should be a Channel made where every Row of Plants grow, to detain the Water poured on them, and prevent its running off. In Autumn, if there should happen sharp Frosts, it will be very proper to cover the Plants with Peas Haulm, or other light Covering, to prevent their being pinched, by which Method they may be continued for Use till the Middle of Winter.

A small Bed will be sufficient at each Sowing for a middling Family; and a Bed of about 20 Feet long, and 4 broad, will be full enough at a Time, for a large one.

FOENUM BURGUNDIACUM. See Medica Sativa.

FOENUM GRÆCUM. See Trigonella.

FOOT STALKS, are those small Stalks which immediately sustain the Leaves, Flowers, or Fruit.

FOUNTAINS are Sources or Springs of Water, arising out of the Ground.

Of artificial Fountains there are a great Variety, the Mechanism of which not being to my Purpose, I will not dwell upon it; though I may assert, that they are not only great Ornaments to a fine Garden, but also of great Use. But they ought not to be placed too near the House, by Reason of the Vapours that arise from the Water, which may be apt to strike a Damp to the Wall, and spoil the Paintings, &c. and the Summer Vapours may cause a Malignity in the Air, and so be prejudicial to the Health of the Family; and likewise the Noise may be incommodious in the Night.

Fountains in a Garden should be so distributed, that they may be seen almost all at one Time, and that the Water Spouts may range all in a Line one with another, which is the Beauty of them, for this occasions an agreeable Confusion to the Eye, making them appear to be more in Number than really they are. See *Jet d'Eau, Water, &c.*

FRAGARIA. Lin. Gen. Plant. 558. Tourn. Inst. R. H. 295. Strawberries; in French, *Frasier*.

The Characters are,

The Empalement is of one Leaf, cut into 10 Parts at the Top. The Flower hath 5 roundish Petals, which are inserted in the Empalement, and spread open. It hath 20 Stamina, inserted in the Empalement, and terminated by Moon-shaped Summits. It hath a great Number of Germens collected into a Head, each having a single Style, inserted in the Side of the Germen, crowned by single Stigmas; this Head becomes a large, soft, pulpy Fruit, which, if left, falls away, leaving many small angular Seeds in the Empalement.

The Species are,

1. **FRAGARIA foliis ovatis serratis, calycibus brevibus, fructu parvo.** Strawberry with oval sawed Leaves, short Empalements, and a small Fruit. This is the *Fragaria vulgaris*. C. B. P. 226. The common, or Wood Strawberry.

2. **FRAGARIA foliis oblongo-ovatis serratis, infernè incanis, calycibus longioribus, fructu subrotundo.** Strawberry with oblong, oval, sawed Leaves, hoary on their under Side, longer Empalements, and a roundish Fruit. This is the *Fragaria Virginiana* fructu Coccineo. Hist. Ox. 2. 186. Virginia Strawberry with a Scarlet Fruit commonly called the Scarlet Strawberry.

3. **FRAGARIA foliis ovato-lanceolatis rugosis, fructu ovato.** Strawberry with oval, Spear-shaped, rough Leaves, and an oval Fruit. This is the *Fragaria fructu parvi pruni magnitudine*. C. B. P. 327. Strawberry with Fruit as large as a small Plum, commonly called Hautboy Strawberry.

4. **FRAGARIA foliis ovatis carnosissimis hirsutis, fructu maximo.** Strawberry with oval, fleshy, hairy Leaves, and a large Fruit. This is the *Fragaria Chilensis, fructu maximo foliis carnosissimis hirsutis*. Hort. Elth. 145. Tab. 120. Strawberry of Chili with a large Fruit, and hairy fleshy Leaves, called *Frutilla*, in America.

There are several other Varieties of this Fruit, now cultivated in England; but I have not seen any other which can be called a distinct Species; these, I think, may be allowed to be so, for they never alter from one to the other, by any Cultivation, though the Fruit is frequently improved, so as to be of a larger Size thereby; therefore those who have supposed them but one Species, have greatly erred in so doing; I shall therefore mention the several Varieties of Strawberry, which are at present to be found in the Gardens, under the Species to which they naturally belong.

The first Sort is the common Wood Strawberry, which grows naturally in the Woods in England, and is so well known, as to need no Description; of this there are three Varieties, 1. The common Sort with red Fruit, 2. The white Wood Strawberry, which ripens a little later in the Season, and is by many Persons preferred to it for its quick Flavour, but as it seldom produces so large Crops of Fruit as the red Sort, so it is not very generally cultivated. 3. The green Strawberry, by some called the Pine Apple Strawberry, from its rich Flavour. The Fruit of this is green when ripe; it is very firm, and hath a very high Flavour; this is a late ripe Fruit, and unless it is planted in a moist loamy Soil, it is a very bad Bearer, but in such Land where it does succeed, it merits Cultivation as much as any of the Sorts.

The Scarlet Strawberry is the first ripe, for which Reason it merits Esteem, had it nothing else to recommend it, but the Fruit is so good, as by many Persons of good Taste to be preferred to it; this was brought from Virginia, where it grows naturally in the Woods, and is so different from the Wood Strawberry in Leaf, Flower, and Fruit, that there can be no Doubt of their being distinct Species.

A Variety of this hath been of late introduced from the Northern Parts of America, which has the Appearance of a distinct Species. The Leaves of this are rounder, and not so deeply veined; the Crenatures on their Edges broader and more obtuse; the Leaves which compose the Empalement, are much longer, hairy, and the Fruit larger; but as in other Respects it approaches near to the Scarlet Strawberry, so I have chosen to join it to that, rather than make a distinct Species of it; this I have been informed grows naturally in Louisiana.

The Hautboy Strawberry, which the French call *Capitons*, came originally from America, but has been long cultivated in the English Gardens, and is so very different from the other Sorts in Leaf, Flower, and Fruit, that no one can doubt of their being different Species; there is an Improvement of this Sort, which is commonly called the

the Globe Hautboy. The Fruit of this is larger, and of a globular Form, but this Difference has certainly arisen from Culture; for where these have been neglected a Year or two, they have degenerated to the common Hautboy again; where the Ground is proper for this Plant, and their Culture is well managed, the Plants will produce great Plenty of Fruit, which will be large, and well flavoured, and by some Persons are preferred to all the other Sorts.

The *Cbili* Strawberry was brought to *Europe* by *Mont. Frazier*, an Engineer, who was sent to *America* by the late King of *France*, and was first planted in the Royal Garden at *Paris*, from whence it was communicated to several curious Persons in *Holland*, and in the Year 1727, I brought a Parcel of the Plants to *England*, which were communicated to me by *Mr. George Clifford*, of *Amsterdam*, who had large Beds of this Sort growing in his curious Gardens at *Hartecamp*. The Leaves are hairy, oval, and of a much thicker Substance, than of any Sort yet known, and stand upon very strong hairy Foot Stalks; the Runners from the Plants are very large, hairy, and extend to a great Length, putting out Plants at several Distances. The Foot Stalks which sustain the Flowers are very strong; the Leaves of the Empalement are long and hairy. The Flowers are large, and often deformed, so are the Fruit, which is very large, and when cultivated in very strong Land, the Plants produce Plenty of Fruit, which is firm, and very well flavoured, but as it is a bad Bearer, in general it has been neglected.

Strawberries love a gentle hazelly Loam, in which they will thrive and bear greater Plenty of Fruit, than in a light rich Soil. The Ground should also be moist, for if it is very dry, all the Watering which is given to the Plants in warm dry Seasons, will not be sufficient to procure Plenty of Fruit, nor should the Ground be much dunged, for that will cause the Plants to run into Suckers, and grow luxuriant, and will render them less fruitful.

The best Time to remove these Plants is in *October*, that they may get new Roots before the hard Frost sets in, which loosens the Ground, so that if the Roots are not pretty well established in the Ground, the Plants are frequently turned out of it by the first Thaw, therefore the sooner they are planted when the autumnal Rains begin, the better will their Roots be established; and there will be less Danger of their miscarrying; sometimes those which are well rooted, will produce a few Fruit the first Year; there are some who transplant them in Spring, but where this is done, they must be duly supplied with Water in dry Weather, otherwise they will not succeed.

The Ground in which they are planted should be thoroughly cleaned from the Roots of Couch, and all other bad Weeds, for as the Strawberry Plants are to remain three Years before they are taken up, so if any Roots of those bad Weeds are left in the Ground, they will have Time to multiply so greatly as to fill it, and overbear the Strawberry Plants. The Ground should also be well trenched and made level, then the usual Method is to lay it out into Beds of four Feet broad, with Paths two Feet, or two and a Half broad between each; these Paths are necessary for the Convenience of gathering the Fruit, and for Weeding and Dressing the Beds;

after the Beds are marked out, there should be four Lines drawn in each, at a Foot Distance, which will leave six Inches Space on each Side, between the Outside Rows and the Paths; then the Plants should be planted at about a Foot Distance from each other in the Rows, in a Quincunx Order, being careful to close the Earth to the Roots of the Plants, and if there should not happen Rain soon after, they should be well watered to settle the Earth to their Roots.

The Distance here mentioned for the Plants to be placed, must be understood for the Wood Strawberries only, for as the other Sorts grow much larger, their Distances must be proportioned to their several Growths; therefore the Scarlets and Hautboys, should have but three Rows of Plants in each Bed, which should be at fifteen Inches Distance, and the Plants in the Rows should be allowed the same Space from each other, and the *Cbili* Strawberry must have but two Rows of Plants in each Bed, which should be two Feet apart in the Rows, for as these grow very strong, if they have not Room to spread, they will not be very fruitful.

In the Choice of proper Plants of any of the Sorts, depends the whole Success, for if they are promiscuously taken from Beds without Care, great Part of them will become barren; these are generally called blind, which is when there are Plenty of Flowers, but no Fruit produced; if these Flowers are well examined, they will be found to want the female Organs of Generation, most of them abounding with Stamina, but there are few, if any Styles, so that it frequently happens among these barren Plants, that some of them will have a Part of an imperfect Fruit formed, which will sometimes ripen; this Barrenness is not peculiar to Strawberries, but is general to all those Plants which have creeping Roots, or Stalks, and the more they increase from either, the sooner they become barren, and this in some Degree runs through the vegetable Kingdom: for Trees and Shrubs which are propagated by Cuttings, are generally barren of Seeds in two Generations, that is, when they are propagated by Cuttings, which were taken from Plants raised by Cuttings; this I have constantly found to hold in great Numbers of Plants, and in Fruit Trees it often happens, that those Sorts which have been long propagated by Grafts and Buds, have no Kernels: But to return to the Choice of the Strawberry Plants; these should never be taken from old neglected Beds, where the Plants have been suffered to spread or run into a Multitude of Suckers, nor from any Plants which are not very fruitful, and those Offsets which stand nearest to the old Plants, should always be preferred to those which are produced from the trailing Stalks at a farther Distance; the Wood Strawberry is best when the Plants are taken fresh from the Woods, provided they are taken from fruitful Plants, because they are not so liable to ramble and spread, as those which are taken from Plants which have been long cultivated in Gardens; therefore those who are curious in cultivating this Fruit, should be very careful in the Choice of their Plants.

When the Plants have taken new Root, the next Care is, if the Winter prove severe, to lay some old Tanners Bark over the Surface of the Bed between the Plants, to keep out the Frost; this Care is absolutely necessary to the *Cbili* Strawberry, which is frequently killed.

killed in hard Winters, where they are exposed without any Covering; therefore where Tanners Bark, cannot be easily procured, Saw-dust, or Sea Coal Ashes may be used, or in Want of these, if decayed Leaves of Trees, or the Branches of ever-green Trees with their Leaves upon them, are laid over the Beds, to prevent the Frost from penetrating deep into the Ground, it will secure the Plants from Injury.

The following Summer, the Plants should be constantly kept clean from Weeds, and all the Runners pulled off as fast as they are produced; if this is constantly practised, the Plants will become very strong by the following Autumn, whereas when this is neglected (as is too frequently seen) and all the Runners permitted to stand during the Summer Season, and then pulled off in Autumn, the Plants will not be half so strong as those where that Care has been taken; therefore there will not be near the Quantity of Fruit upon them the following Spring, nor will the Fruit be near so large and fair; and where proper Care is taken of the Plants the first Summer, there is generally a plentiful Crop of Fruit the second Spring, whereas when this is neglected, the Crop will be thin, and the Fruit small.

As this Fruit is very common, there are but few Persons who cultivate it with proper Care, therefore I shall give some Directions for doing it, which, if carefully practised, will be attended with Success.

The old Plants of Strawberries are those which produce the Fruit, for the Suckers never produce any till they have grown a full Year; therefore it appears how necessary it is to divest the old Plants of them, for where ever they are suffered to remain, they rob the fruitful Plants of their Nourishment, in Proportion to their Number, for each of these Suckers send out a Quantity of Roots, which interfere, and are so closely matted together, as to draw away the greatest Part of the Nourishment from the old Roots, whereby they are greatly weakened; and these Suckers also render each other very weak, that from hence the Cause of Barrenness arises, for I have known where the old Plants have been constantly kept clear from Suckers, they have continued very fruitful four or five Years without being transplanted; however it is the best Way to have a Succession of Beds, that after three Years standing, they may be taken up, because by that Time they will have exhausted the Ground of those vegetable Salts, necessary for their Nourishment, for it is always observed, that Strawberries planted on fresh Land, are the most fruitful.

The next Thing to be observed, is in Autumn, to divest the Plants of any Strings, or Runners, which may have been produced, and also of all the decayed Leaves, and the Beds cleared from Weeds; then the Paths should be dug up, and the Weeds buried which were taken from the Beds, and some Earth laid over the Surface of the Beds between the Plants, this will strengthen and prepare them for the following Spring; and if after this, there is some old Tanners Bark laid over the Surface of the Ground between the Plants, it will be of great Service to them. In Spring, after the Danger of hard Frost is over, if the Ground between the Plants in the Beds is forked, with a narrow three pronged Fork, to loosen it and break the Clods, by this Operation, the Tan which was laid over the Surface of the Ground in Autumn will

be buried, which will be a good Dressing to the Strawberries, especially in strong Land; then about the End of *March*, or the Beginning of *April*, if the Surface of the Beds is covered with Moss, it will keep the Ground moist, and prevent the drying Winds from penetrating the Ground, and thereby secure a good Crop of Fruit, and the Moss will preserve the Fruit clean; that when heavy Rains may fall after the Fruit is full grown, there will be no Dirt washed over them, which frequently happens, so that the Fruit must be washed before it is fit for the Table, which greatly diminishes its Flavour; therefore where this Method is practised, the Fruit may be had in Perfection.

The Soil in which the *Chili* Strawberry succeeds best, is a very strong Brick Earth, approaching near to Clay; in this Soil I have seen them produce a tolerable good Crop, and the Fruit has been extremely well flavoured, and if the Runners are cut off as they are produced, so as to leave only the old Plants, I make no Doubt but they may be as fruitful as the common Hautboy, this I mention from one or two Experiments, made by my Direction, and not from Theory.

Some Persons are so fond of Strawberries, as to be at an Expence to obtain them early in the Year, and to continue them as late in the Season as possible; and should I omit to give Directions for both these Managements, they would suppose the Book very defective, therefore I shall mention the Practice of a few who have succeeded best in the Management of these Fruits, I shall begin with Directions for obtaining these Fruits early in the Spring.

Where there are hot Walls erected in Gardens for producing early Fruit, it is very common to see Strawberries planted in the Borders, that the Fire which is applied for ripening the Fruit against the Walls, may serve the Purpose of bringing forward the Strawberries; but where this is practised, the Strawberry Plants should be annually renewed, and all the Earth of the Borders taken out at least two Feet deep, and fresh Earth brought in, which will be equally good for the Wall Trees; but as was before observed, that the old Plants of Strawberries only, are those which produce the Fruit, there should be a sufficient Number of Plants brought up in Pots to supply the Border annually, and the same must be done if they are to be raised on a common hot Bed, or in Stoves; therefore I shall begin with giving Directions for raising and preparing the Plants for those Purposes.

The Sorts which are the most proper for forcing early, are the Scarlet and the Wood Strawberries, for the Hautboy grows too large for this Purpose. In the Choice of the Plants, there should be an especial Care taken to have them from the most fruitful Plants, and those which grow immediately to the old Plants; these should be taken off in Autumn, and each planted in a separate small Pot filled with loamy Soil, and placed in a shady Situation till they have taken Root, after which they may be removed to an open Situation, where they may remain till the Middle of *November*, when the Pots should be plunged into the Ground up to their Rims, to prevent the Frost from penetrating through the Side of the Pots; if these are placed near a Wall, Pale, or Hedge,

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Hedge, exposed to an East Aspect, or North East, they will succeed better than in a warm Situation, because they will not be forced too forward, the only Care they require, is to secure them from being turned out of the Pots after Frost. The Spring following the Plants will be so far advanced, as to have filled the Pots with their Roots, by the End of *April*, when they should be turned out of the Pots, and their Roots pared; then planted into Penny Pots filled with the like loamy Soil, and plunged into the Ground in a shady Situation, where they should remain the following Summer, during which Time they must be duly kept clean from Weeds, and all the Runners taken off as fast as they are produced; likewise if any Flowers come out, they must be pinched off, and not suffered to bear Fruit, which would weaken the Plants, for there cannot be too much Care taken to have the Plants as strong as possible, that they may produce Plenty of Fruit, without which they are not worth the Trouble of forcing.

About the Middle of *October*, or earlier, if the Autumn proves cold, the Pots should be removed into a warmer Situation, to prepare them for forcing, for they should not be suddenly removed from a very cold Situation immediately into the Stove, or hot Bed, but be gradually prepared for it; but where they are designed for the Borders near a hot Wall, they may then be turned out of the Pots, and planted into the Borders, that they may have Time to get fresh Rooting, before the Fires are made to heat the Walls; when these are planted, they may be placed very close to each other, for as they are designed to remain there no longer than till they have ripened their Fruit, they will not require much Room, as their Roots will find sufficient Nourishment below, and also from the Earth which is filled into the Spaces between the Balls of Earth, about their Roots; and it is of Consequence to get as much Fruit as possible in a small Space where there is an Expence to force them early. If the Fires are lighted about *Christmas*, the Strawberries in these Borders will be ripe the End of *March*, or if the Season should prove very cold, it may be the Middle of *April*, before they will be fit for the Table.

In the Management of the Plants there must be Care taken to supply them with Water when they begin to shew their Flowers, otherwise they will fall off without producing any Fruit; and, in mild Weather, there should be fresh Air admitted to them every Day; but as Fruit Trees against the Wall must be so treated, the same Management will agree with the Strawberries.

If the Strawberries are intended to be forced in a Stove, where there are Pine Apples, and no Room to plunge them in the Tan Bed, then the Plants should be transplanted into larger Pots in *September*, that they may be well rooted before they are removed into the Stove, which should not be till *December*, but if they are placed under a Frame the Beginning of *November*, where they may be screened from the Frost, it will prepare the Plants better for forcing, and those who are desirous to have them very early, make a hot Bed under Frames, upon which they place their Plants the latter End of *October*, which will bring them forward to flower, and then they remove the Plants into the Stove; when these Plants are removed into the Stove, they should be placed

near the Glasses, that they may enjoy as much of the Sun as possible, for when they are placed backward, the Plants will draw up weak, and the Flowers will drop without producing Fruit. As the Earth in the Pots will soon dry when they stand on the dry Pavement of the hot House, the Plants must be duly watered, but it must be done with Discretion, and not too much given to them, which will be equally hurtful; if these Plants are properly managed, they will produce ripe Fruit in *February*, which is as early as most People will choose to eat them. When the Fruit is all gathered, the Plants should be turned out of the Stove, for as they will be of no farther Service, they should not remain to take up Room, nor should those Plants in the Borders near the hot Walls, be left there after their Fruit is gathered, but immediately taken up, that they may rob the Fruit Trees of their Nourishment as little as possible.

Where there is no Conveniency of Stoves, or hot Walls, the Fruit may be ripened on common hot Beds, and though they may not be quite so early as with the other Advantages, yet I have seen great Crops of the Fruit ripe in *April*, on common hot Beds under Frames, and done with a small Expence in the following Manner.

The Plants were prepared in Pots after the Manner before directed, which were placed in a warm Situation in the Beginning of *October*, and about *Christmas* the hot Bed was made, in the same Manner as for Cucumbers, but not so strong, and as soon as the first violent Steam of the Dung was over, some old rotten Dung, laid over the hot Bed to keep down the Heat, or where it can be easily procured, Neats Dung is preferable for this Purpose; then the Pots should be placed on the Bed as close together as possible, filling up the Interstices between the Pots with Earth; then the Plants must have Air admitted to them every Day, and if the Heat of the Bed is too great, the Pots should be raised up, to prevent their Roots being scorched, and if the Bed is too cold, the Sides of it should be lined with some hot Dung; this first Bed will bring the Plants to flower by the Middle, or latter End of *February*, by which Time the Heat of the Bed will be spent, therefore another hot Bed should be prepared to receive the Plants, which need not be so strong as the first; but upon the hot Dung, should be laid some Neats Dung about two Inches thick, which should be equally spread and smoothed, this will prevent the Heat of the Bed from injuring the Roots of the Plants; upon this should be laid two Inches of a loamy Soil; when this has lain two Days to warm, the Plants should be taken out of the first hot Bed, and turned carefully out of the Pots, preserving all the Earth to their Roots, and placed close together upon this new hot Bed, filling up the Vacuities between the Balls, with loamy Earth, the Roots will soon strike into this fresh Earth, which will strengthen their Flowers, and cause their Fruit to set in Plenty; and if proper Care is taken to admit fresh Air to the Plants, and supply them properly with Water, they will have Plenty of ripe Fruit in *April*, which will be full two Months before their natural Season.

The Methods practised to retard this Fruit, is first by planting them in the coldest Part of the Garden, where they may be as much in Shade as possible, and the Soil should be strong and cold; when there are such Places

in.

in a Garden, the Fruit will be near a Month later than in a warm Situation; the next is to cut off all the Flowers when they first appear, and if the Season proves dry, to water them plentifully which will cause them to put out a fresh Crop of Flowers, and if they are supplied with Water, there will be a late Crop of Fruit, but these are not so well flavoured as those which ripen in their natural Season.

In the Spring of the Year 1724, there was scarce any Rain from February, till about the Middle of July, so that most of the Strawberries and Raspberries in the Gardens near London, were burnt up, and came to no Perfection; but upon Plenty of Rain falling in July, they recovered and put out Plenty of Flowers, which were succeeded by Fruit, which ripened in September, and the Markets of London were supplied with great Plenty of both those Fruits at that Season of the Year.

FRANGULA. Tourn. Inst. R. H. 612. Tab. 383. *Rhamnus*. Lin. G. P. 235. Berry-bearing Alder.

The Characters are,

The Empalement of the Flower is of one Leaf, cut at the Top into five Segments, which are erect. The Flower hath one Petal, which is cut into five acute Segments; these are placed between the Segments of the Empalement, into which they are inserted, and they are shorter, but stand erect. It hath five Stamina, which are the Length of the Petal, terminated by obtuse Summits; in the Center is situated a globular Germen, supporting a slender Style, crowned by an obtuse Stigma. The Germen afterward becomes a round Berry, inclosing two plain roundish Seeds.

The Species are,

1. FRANGULA foliis ovato-lanceolatis glabris. Frangula with oval, Spear-shaped, smooth Leaves. This is the Frangula, five Alnus, nigra baccifera. Park. Theat. Black Berry-bearing Alder.

2. FRANGULA foliis lanceolatis rugosis. Frangula with rough Spear-shaped Leaves. This is the Frangula rugosior & ampliore folio. Tourn. Berry-bearing Alder with a larger and rougher Leaf.

3. FRANGULA foliis ovatis nervosis. Frangula with oval veined Leaves. This is the Frangula montana pumila saxatilis, folio subrotundo. Tourn. Low Mountain rocky Berry-bearing Alder, with a round Leaf.

4. FRANGULA foliis oblongo-ovatis nervosis, glabris. Frangula with oblong, oval, smooth veined Leaves. This is the Frangula Americana foliis glabris. Dale. American Berry-bearing Alder with smooth Leaves.

The first Sort grows naturally in the Woods in England, so is seldom planted in Gardens; this rises with a woody Stem to the Height of 10 or 12 Feet, sending out many irregular Branches, covered with a dark Bark, and garnished with oval Spear-shaped Leaves, about two Inches long, and one Inch broad, having several transverse Veins from the Mid-rib to the Sides, and stand on short Foot Stalks. The Flowers are produced in Clusters at the End of the former Year's Shoots, also upon the first and second Joints of the same Year's Shoot, each standing upon a short separate Foot Stalk, on every Side the Branches; these are very small, of an herbaceous Colour, and do not expand; they are succeeded by small round Berries, which turn first red, but afterward black when ripe. The Flowers appear in June,

and the Berries ripen in September; this stands in the Dispensary as a medicinal Plant, but is seldom used.

The 2d Sort hath larger rough Leaves than the first. It grows naturally on the Alps, and other mountainous Parts of Europe, and is preserved in some Gardens for the Sake of Variety.

The 3d Sort is of humble Growth, seldom rising above two Feet high; this grows on the Pyrenean Mountains, and is seldom preserved unless in Botanick Gardens for Variety; it may be increased by laying down the Branches, but must have a strong Soil.

The 4th Sort grows naturally in North America, from whence I received the Seeds; this is like the first Sort, but the Leaves are longer and broader; they are smooth, of a lucid green, and have many Veins. The Flowers are very like those of the first Sort.

These Shrubs are easily propagated by Seeds, which should be sown as soon as they are ripe, and then the Plants will come up the Spring following; but if they are kept out of the Ground till Spring, the Plants will not come up till the Year after. When the Plants come up, they must be kept clean from Weeds till Autumn, then they may be taken up and planted in a Nursery, in Rows two Feet asunder, and at one Foot Distance in the Rows; in this Nursery they may remain two Years, and may then be planted where they are to remain; they may also be propagated by Layers and Cuttings, but the seedling Plants are best.

The Fruit of the first Sort is often brought into the Markets of London, and sold for Buckthorn Berries; of which Cheat, all such as make Syrup of Buckthorn should be particularly careful; they may be easily distinguished by breaking the Berries, and observing how many Seeds are contained in each, the Berries of this Tree having but two, and those of Buckthorn generally four Seeds in each Berry.

FRAXINELLA. See Dictamnus.

FRAXINUS. Lin. Gen. Plant. 1026. Tourn. Inst. R. H. 577. The Ash Tree; in French, Frêne.

The Characters are,

It hath hermaphrodite and female Flowers on the same Tree, and sometimes on different Trees. The hermaphrodite Flowers have no Petals, but a small four pointed Empalement including two erect Stamina, which are terminated by oblong Summits, having four Furrows. In the Center is situated an oval compressed Germen, supporting a cylindrical Style, crowned by a bifid Stigma. The Germen becomes a compressed bordered Fruit, shaped like a Bird's Tongue, having one Cell, inclosing a Seed of the same Form. The female Flowers are the same, but have no Stamina.

The Species are,

1. FRAXINUS foliolis serratis, floribus apetalis. Lin. Sp. Plant. 1057. Ash Tree whose smaller Leaves are serrated, and Flowers having no Petals. This is the Fraxinus excelsior. C. B. P. 416. The common Ash.

2. FRAXINUS foliolis ovato-lanceolatis serratis, floribus coloratis. Ash Tree whose smaller Leaves are oval, Spear-shaped, and sawed, and the Flowers coloured. This is the Fraxinus rotundior folio. C. B. P. Ash Tree with a rounder Leaf, commonly called Manna Ash.

3. FRAXINUS foliolis serratis floribus corollatis. Lin. Sp. Plant.

Plant. 1057. Ash Tree whose smaller Leaves are sawed, and Flowers have Petals. This is the *Fraxinus humilior*, *frœ altera Theophrasti, minore & tenuiore folio*. C. B. P. 416. Dwarf Ash of *Theophrastus* with smaller and narrower Leaves.

4. *FRAXINUS foliolis lanceolatis glabris, floribus paniculatis terminatricibus*. Ash Tree with smooth Spear-shaped Leaves, and Flowers growing in Panicles at the Ends of the Branches. This is the *Fraxinus florifera botryoides*. Mor. Præl. 265. The flowering Ash.

5. *FRAXINUS foliolis integerrimis, petiolis teretibus*. Flor. Virg. 122. Ash Tree with the small Leaves entire, and taper Foot Stalks. This is the *Fraxinus ex Novâ Angliâ, pinnis foliorum in mucronem productioribus*. Rand. Cat. Hort. Chelf. New England Ash with long acute Points to the Wings of the Leaves.

6. *FRAXINUS foliolis lanceolatis, minimè ferratis, petiolis teretibus pubescentibus*. Ash Tree with Spear-shaped Leaves, very slightly sawed on their Edges, and taper Foot Stalks, which are hairy. This is the *Fraxinus Caroliniana, latiore fructu*. Rand. Cat. H. Chelf. Carolina Ash with a broad Fruit.

The first Sort is the common Ash Tree, which grows naturally in most Parts of England, and is so well known as to need no Description. The Leaves of this Sort have generally five Pair of Lobes, and are terminated by an odd one, they are of a very dark green, and their Edges are slightly sawed. The Flowers are produced in loose Spikes from the Side of the Branches, which are succeeded by flat Seeds, which ripen in Autumn; there is a Variety of this with variegated Leaves which is preserved in some Gardens.

The 2d Sort grows naturally in Calabria, and is generally supposed to be the Tree from whence the Manna is collected, which is an Exsudation from the Leaves of the Tree. The Shoots of this Tree are much shorter, and the Joints closer together than those of the first Sort; the small Leaves are shorter, deeper sawed on their Edges, and are of a lighter green. The Flowers come out from the Side of the Branches, which are of a purple Colour, and appear in the Spring before the Leaves come out. This Tree is of humble Growth, seldom rising more than 15 or 16 Feet in England.

The 3d Sort is a low Tree, which rises about the same Height as the second; the Leaves of this Sort are much smaller and narrower than those of the first, but are sawed on their Edges, and are of the same dark Colour. The Flowers of this Sort have Petals, which are wanting in the common Ash.

The 4th Sort was raised by the late Dr. Uvedale at Enfield, from Seeds brought from Italy by Dr. William Sberard, where the Trees grow naturally; it was supposed to be a different Sort from that mentioned by Dr. Morrifson, in his *Prælia Botanica*, but by comparing them together they appear to be the same.

The Leaves of this Sort have but three or four Pair of Lobes (or small Leaves) which are short, broad, and smooth, of a lucid green, and irregularly sawed on the Edges; the Mid-rib of the great Leaf is jointed, and swelling where the Leaves come out. The Flowers grow in loose Panicles at the End of the Branches; these are most of them male, having two Stamina in each,

but no Germen or Style; they are of a white herbaceous Colour, and appear in May. As this Sort very rarely produces Seeds in England, it is propagated by grafting or budding it upon the common Ash.

The 5th Sort was raised from Seeds, sent from New England in the Year 1724, by Mr. Moore. The Leaves of this Tree have but three, or at most but four Pair of Lobes, which are placed far distant from each other, and are terminated by an odd Lobe, which runs out into a very long Point; they are of a light green and are entire, having no Serratures on their Edges: This Tree shoots into strong irregular Branches, but doth not grow to a large Size in the Trunk. It is propagated by grafting it on the common Ash.

The 6th Sort was raised from Seeds, sent from Carolina in 1724, by Mr. Catesby. The Leaves have seldom more than three Pair of Lobes, the lower being the least, and the upper are the largest; these are about five Inches long and two broad, of a light green Colour, and slightly sawed on their Edges; the Foot Stalk, or rather the Mid-rib of the Leaves is taper, and has short downy Hairs; the Seeds are broader than those of the common Ash, and of a very light Colour. As this Sort hath not yet produced Seeds in England, it is propagated by grafting it upon the common Ash.

These Trees are now propagated in Plenty in the Nurseries for Sale, as there has been of late Years a great Demand for all the hardy Sorts of Trees and Shrubs, which will live in the open Air; but all those Trees which are grafted upon the common Ash, are not so valuable as those which are raised from Seeds, because the Stock grows much faster than the Grafts; so that the lower Part of the Trunk, so far as the Stock rises, will often be twice the Size of the upper; and if the Trees stand much exposed to the Wind, the Grafts are frequently broken off to the Stock, after they are grown to a large Size, which is a great Disappointment to a Person after having waited several Years, to see their Trees suddenly destroyed. Beside, if the Wood of either of the Sorts is valuable, it can be of little Use when the Trees are so raised.

The 4th Sort is generally planted for Ornament, the Flowers making a fine Appearance when in Beauty, and almost every Branch is terminated by a large loose Pannicle; so that when the Trees are large, and covered with Flowers, they are seen at a great Distance.

All the other Sorts serve to make a Variety in Plantations, but have little Beauty to recommend them; and as their Wood seems to be greatly inferior to that of the common Ash, so there should be few of these planted, because they will only fill up the Space where better Trees might grow.

The common Ash propagates itself in Plenty by the Seeds which scatter in Autumn, so that when they happen to fall in Places where Cattle do not come, Plenty of the Plants will rise in the Spring; but where any Person is desirous to raise a Quantity of the Trees, the Seeds should be sown as soon as they are ripe, and then the Plants will come up the following Spring; but if the Seeds are kept out of the Ground till Spring, the Plants will not come up till the Year after, which is the same with all the Sorts of Ash; so that when any of their Seeds are brought from Abroad, as they seldom arrive

Here before the Spring, the Plants must not be expected to appear till the next Year; therefore the Ground should be kept clean all the Summer where they are sown, and not disturbed, lest the Seeds should be turned out of the Ground, or buried too deep to grow; for many Persons are too impatient to wait a Year for the Growth of Seeds, so that if they do not come up the first Year, they dig up the Ground, and thereby destroy the Seeds.

When the Plants come up, they must be kept clean from Weeds during the Summer; and if they make good Progress in the Seed Bed, they will be fit to transplant by the Autumn, therefore there should be some Ground prepared to receive them; and as soon as their Leaves begin to fall, they may be transplanted. In taking them up, there should be Care taken not to break or tear off their Roots; to prevent which, they should be taken up with a Spade, and not drawn up, as is frequently practised; for as many of the Plants which rise first from Seeds, will out-strip the others in their Growth, so it is frequently practised, to draw up the largest Plants, and leave the smaller to grow a Year longer before they are transplanted; and to avoid hurting those which are left, the others are drawn out by Hand, and thereby many of their Roots are torn off or broken; therefore it is much the better Way to take all up, little or big together, and transplant them out, placing the large ones together in Rows, and the smaller by themselves. The Rows should be three Feet asunder, and the Plants a Foot and a Half Distance in the Rows; in this Nursery they may remain two Years, by which Time they will be strong enough to plant where they are to remain; for the younger they are planted out, the larger they will grow; so that where they are designed to grow large, they should be planted very young; and the Ground where the Plants are raised, should not be better than that where they are designed to grow; for when any Plants are raised in good Land, and afterward transplanted into worse, they very rarely thrive; so that it is much the best Method to make the Nursery upon a Part of the same Land, where the Trees are designed to be planted, and then a sufficient Number of the Trees may be left standing upon the Ground, and these will out-strip those which are removed, and will grow to a larger Size.

Where People live in the Neighbourhood of Ash Trees, they may supply themselves with Plenty of self-sown Plants, provided Cattle are not suffered to graze on the Land, for they will eat off the young Plants, and not suffer them to grow; but where the Seeds fall in Hedges, where they are protected by Bushes, the Plants will come up and thrive; and in these Hedges the Trees frequently are permitted to grow till they have destroyed the Hedge, for there is scarce any Tree so hurtful to all Kinds of Vegetables as the Ash, which robs every Plant of its Nourishment within the Reach of its Roots, therefore should never be suffered to grow in Hedge Rows; for they not only kill the Hedge, but impoverish Corn, or whatever is sown near them. Nor should any Ash Trees be permitted to grow near Pasture Grounds, for if any of the Cows eat of the Leaves or Shoots of the Ash, all the Butter which is made of their Milk will be rank and of no Value; which is always the Quality

of the Butter made about Guildford, Godalmin, and some other Parts of Surry, where there are Ash Trees growing about all their Pastures, so that it is very rare to meet with any Butter in those Places which is fit to eat; but in all the good Dairy Countries, they never suffer an Ash Tree to grow.

If a Wood of these Trees is rightly managed, it will turn greatly to the Advantage of its Owner; for by the Under-wood, which will be fit to cut every seven or eight Years, there will be a continual Income more than sufficient to pay the Rent of the Ground, and all other Charges; and still there will be a Stock preserved for Timber, which in a few Years, will be worth forty or fifty Shillings per Tree.

This Timber is of excellent Use to the Wheelwright and Cartwright for Ploughs, Axle-trees, Wheel-rings, Harrows, Bulls, Oars, Blocks for Pullies, and many other Purposes.

The best Season for felling these Trees is from November to February; for if it be done either too early in Autumn, or too late in the Spring, the Timber will be subject to be infested with Worms, and other Insects; but for Lopping of Pollards, the Spring is preferable for all soft Woods.

FRITILLARIA. *Lin. Gen. Plant. 372. Tourn. Infl. R. H. 376. Tab. 201. Corona Imperialis. Tourn. Infl. R. H. 372. Tab. 197, 198. Fritillary, or Chequered Tulip and Crown Imperial.*

The Characters are,

The Flower hath no Empalement; it hath six oblong Petals, and is Bell-shaped, spreading at the Base; in the Hollow, at the Base of each Petal, is situated a Nectarium; the Flower hath six Stamina standing near the Style, which are terminated by oblong four cornered Summits. In the Center is situated an oblong three cornered Germen, supporting a single Style longer than the Stamina, and crowned by a spreading obtuse Stigma. The Germen becomes an oblong Capsule with 3 Lobes, having 3 Cells, filled with flat Seeds ranged in a double Order.

The Capsule of *Fritillaria* is oblong and smooth, but that of *Corona Imperialis* hath acute Borders, or membranaceous Wings.

These two Genera of Fritillary and Crown Imperial, have been always separated, till Dr. *Linnaeus* joined them together; indeed, by their Flowers they may be properly enough placed in the same Genus; but, if their Fruit may be allowed as a characteristick Note, they should be separate; however, as this new System is generally received, so I shall, in Compliance with the present Taste, join them together.

The Species are,

1. *FRITILLARIA foliis linearibus alternis, floribus terminalibus.* Fritillary with narrow Leaves placed alternate, and Flowers terminating the Stalk. This is the *Fritillaria præcox, purpurea, variegata.* C. B. P. 64. Early, purple, variegated, chequered Tulip.

2. *FRITILLARIA foliis infimis oppositis.* Hort. Cliff. 81. Fritillary whose lower Leaves are opposite. This is the *Fritillaria Aquitanica, flore luteo obscura.* Swert. Floil. Aquitain chequered Tulip, with an obscure yellow Flower.

3. *FRITILLARIA floribus ascendentibus.* Fritillary with Flowers growing above each other. This is the *Fritillaria*

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Fritillaria nigra. Lob. Adver. 2. 496. Black chequered Tulip.

4. *FRITILLARIA foliis lanceolatis, caule unifloro maximo*. Fritillary with Spear-shaped Leaves, and one large Flower on each Stalk. This is the *Fritillaria lutea maxima Italica*. Park. Parad. 43. Largest yellow Italian Fritillary.

5. *FRITILLARIA floribus umbellatis*. Fritillary with Flowers growing in Umbels. This is the *Fritillaria umbellifera*. C. B. P. 64. Umbellated chequered Tulip.

6. *FRITILLARIA racemo nudiusculo, foliis obliquis*. Hort. Upsal. 82. Fritillary with a naked Spike of Flowers and oblique Leaves. This is the *Lilium Persicum*. Dod. Pempt. 220. The Persian Lily.

7. *FRITILLARIA floribus racemosis*. Fritillary with Flowers growing in Bunches. This is the *Fritillaria ramosa, seu lilium Persicum minus*. Mor. Hort. Reg. Blef. Branching Fritillary, or smaller Persian Lily.

8. *FRITILLARIA racemo comoso infernè nudo, foliis integerrimis*. Lin. Hort. Upsal. 82. Fritillary with a tufted Bunch of Leaves over the Flowers, which is naked below, and entire Leaves. This is the *Corona Imperialis*. Dod. Pempt. 202. Crown Imperial.

9. *FRITILLARIA racemo comoso infernè nudo, foliis crenatis*. Lin. Sp. Plant. 303. Fritillary with a tufted Bunch of Leaves over the Flowers, which is naked below, and crenated Leaves. This is the *Corona regalis lilii folio crenato*. Hort. Elth. 110. Royal Crown with a crenated Lily Leaf.

The 1st Sort grows naturally in Italy, and other warm Parts of Europe; and from the Seeds of this there have been great Varieties raised in the Gardens of the Florists, which differ in the Size and Colour of their Flowers; as there are frequently new Varieties produced, it would be to little Purpose to enumerate those at present in the English and Dutch Gardens, which amount to a great Number in the Catalogues of the Dutch Florists, who are very fond of any little Distinction, either in the Colour or Shape to enlarge their Lists.

The Sorts here enumerated, I think may be allowed as distinct Species, notwithstanding Dr. Linnæus has reduced them to three; for I have raised many of all the Sorts from Seed, which have constantly produced the same as the Seeds were taken from, and have only differed in the Colour or Size of the Flowers; for the Sort with broad Leaves produced the same Sort again, and the umbellated and spiked Sorts produced the same, though there are several Varieties in the Colours of their Flowers.

The 1st hath a round compressed Root, in Shape like that of Corn Flag, but is of a yellowish white Colour; the Stalk rises about fifteen Inches high, having three or four narrow long Leaves placed alternately, and the Top is divided into two slender Foot Stalks which turn downward, each sustaining one Bell-shaped inverted Flower, composed of six Petals which are chequered with purple and white like a Chess Board; and in the Center is situated a Germen supporting one Style, crowned by a trifid Stigma; the six Stamina stand about the Style, but are shorter. At the Bottom of each Petal there is a Cavity, in which is situated a Nectarium, filled with a sweet Liquor; after the Flower is fallen,

the Germen swells to a pretty large three cornered blunt Capsule, and then the Foot Stalk is turned and stands erect; when the Seeds are ripe, the Capsule opens in three Parts and lets out the flat Seeds, which were ranged in a double Order. The Flowers of this appear the latter End of March or Beginning of April, and the Seeds are ripe in July. There is a Variety of this with a double Flower.

The 2d Sort grows naturally in France; the Leaves of this are broader, and of a deeper green than the former; the lower Leaves are placed opposite, but those above are alternate; the Stalk rises a Foot and a Half high, and is terminated by two Flowers of an obscure yellow Colour, which spread more at the Brim than those of the first Sort, but are turned downward in the same Manner. This flowers three Weeks after the first. There is a Variety of this with greenish Flowers, which grows naturally in some Parts of England.

The 3d Sort seldom rises more than a Foot high, the Leaves are narrow like those of the first Sort, but are shorter; each Stalk is terminated by 3 or 4 Flowers, which rise above each other; they are of a very dark purple, chequered with yellowish Spots. This flowers in April, about the same Time with the second.

The 4th Sort rises about a Foot high, the Stalk is garnished with Spear-shaped Leaves four Inches long and one broad, of a Grass green Colour; these are sometimes placed opposite, but are generally alternate; the Stalk is terminated by one large Bell-shaped Flower of a yellowish Colour, chequered with light purple. This Sort flowers about the same Time as the first. There are two or three Varieties of this, which differ in the Size and Colour of their Flowers and the Breadth of their Leaves, but retain their specific Difference, so as to be easily distinguished from the other Sorts.

The 5th Sort rises a Foot and a Half high; the Stalk is garnished with shorter and broader Leaves than the first Sort, which are of a grayish Colour; the Flowers are produced round the Stalks like those of the Crown Imperial; they are of a dark purple Colour, chequered with a yellowish green. This flowers about the same Time with the second Sort.

The 6th Sort is commonly called the Persian Lily, and is supposed to grow naturally in Persia, but has been long cultivated in the English Gardens; the Root of this Sort is round and large; the Stalk rises three Feet high; the lower Part of it is closely garnished with Leaves three Inches long, and half an Inch broad, of a grey Colour, standing on every Side of the Stalks, but are twisted obliquely; the Flowers grow in a loose Spike at the Top of the Stalk, forming a Pyramid; they are shaped like those of the other Species, but are much shorter, spread wider at their Brims, and are not bent downward like those. They are of a dark purple Colour, and appear in May, but are seldom succeeded by Seeds in England, so are only propagated by Offsets.

The 7th Sort hath a much shorter Stalk than the last, but is garnished with Leaves like those, only they are smaller; the Stalks branch out at the Top into several small Foot Stalks, each sustaining one dark coloured Flower. This is commonly called the small Persian Lily, from its Resemblance to the former Sort.

These Plants are propagated either by Seeds, or Off-

sets from the old Roots; by the first of which Methods new Varieties will be obtained, as also a larger Stock of Roots in three Years, than can be obtained in twenty or thirty Years in the latter Method: I shall therefore first treat of their Propagation by Seeds.

Having provided yourself with some good Seeds, sowed from the fairest Flowers, you must procure some shallow Pans or Boxes, which must have some Holes in their Bottoms to let out the Moisture; these you should fill with light fresh Earth, laying a few Potsheards over the Holes, to prevent the Earth from stopping them; then, having laid the Earth very level in the Boxes, &c. you must sow the Seeds thereon pretty thick, covering it with fine sifted Earth a Quarter of an Inch thick. The Time for sowing the Seed is about the Beginning of *August*, for if it be kept much longer out of the Ground it will not grow; then place the Boxes or Pans where they may have the Morning Sun until eleven o'Clock, observing, if the Season proves dry, to water them gently, as also to pull up all Weeds as soon as they appear; for if they are suffered to remain until they have taken deep Root into the Earth, they would draw the Seeds out of the Ground whenever they are pulled up. Toward the latter End of *September* you should remove the Boxes, &c. into a warmer Situation, placing them close to a Hedge or Wall exposed to the South; if they are sown in Pots, these should be plunged into the Ground, but they are best in Tubs; these should be covered in severe Frost. In this Situation they may remain until the Middle of *March*, by which Time the Plants will be come up an Inch high; you must therefore remove the Boxes as the Weather increases hot, into a more shady Situation; for while the Plants are young, they are liable to suffer by being too much exposed to the Sun: And in this shady Situation they may remain during the Heat of the Summer, observing to keep them clear from Weeds, and to refresh them now and then with a little Moisture; but be careful not to give them much Water after their Leaves are decayed, which would rot their Roots. About the Beginning of *August*, if the Roots are very thick in the Boxes, you should prepare a Bed of good light fresh Earth, which must be levelled very even, upon which you should spread the Earth in the Boxes in which the small Roots are contained, equally covering it about one Fourth of an Inch thick with the same fresh Earth: This Bed should be situated in a warm Position, but not too close to Hedges, Walls, or Pales, which would cause their Leaves to be long and slender, and make the Roots weaker than if placed in a more open Exposure.

In this Bed they may remain until they flower, which is generally the third Year from sowing; at which Time you should put down a Mark to the Roots of all such as produce fair Flowers, that at the Time of taking them out of the Ground (which ought to be soon after their green Leaves are decayed), they may be selected into a Bed amongst your old Roots of this Flower, which, for their Beauty, are preserved in the best Gardens; but the other less valuable Flowers may be planted in the Borders of the Parterre Garden for their Variety, where, being intermixed with other Flowers of different Seasons, they will make a good Appearance.

The fine Sorts of this Flower, should remain undisturbed

three Years, by which Time they will have produced many Offsets, and should be taken up when their Leaves are decayed, and planted into a fresh Bed, taking such of their Offsets as are large enough to produce Flowers to plant in the Flower Garden; but the smaller Roots may be planted into a Nursery Bed, until they have obtained Strength enough to flower; but you must never suffer these Roots to lie out of the Ground when you remove them, but plant them again immediately, otherwise they will perish.

During these three Years which I have advised the Roots to remain in the Beds, the Surface of the Earth should be stirred every Autumn with a Trowel, observing not to go so deep as to bruise the Root, and at the same Time lay a thin Cover of very rotten Dung or Tanners Bark upon the Surface of the Beds; which being washed into the Ground, will cause the Flowers to be larger, as also the Roots to make a greater Increase: You must also observe to keep them constantly clear from Weeds, and those Roots which you would preserve with Care, should not be suffered to feed.

When a Stock of good Flowers are obtained, they may be preserved and increased as other bulbous rooted Flowers, which is by Offsets sent out from their Roots, which should be taken off every other Year from the finest Sorts; but the ordinary Flowers may remain three Years undisturbed, in which Time they will have multiplied so much, as that each Root will have formed a Cluster, so that if they are left longer together, the Roots will be small, and the Flowers very weak, therefore if these are taken up every other Year, the Roots will be the stronger. These Roots may be treated in the same Manner as Tulips, and other bulbous rooted Flowers, with this Difference only, that the Roots will not bear to be kept out of the Ground so long; therefore if there should be a Necessity for keeping them out of the Ground any Time, it will best to put the Roots into Sand to prevent their shrinking.

As these Flowers come out early in the Spring, they make a pretty Appearance in the Borders of the Pleasure Garden, where they are planted in small Clumps; for when they stand single in the Borders, they make but a poor Figure.

The eighth Sort is the Crown Imperial, which is now very common in the *English* Gardens. This grows naturally in *Persia*, from whence it was first brought to *Constantinople*, and about the Year 1570, was introduced to these Parts of *Europe*; of this there are a great Variety of Sorts now preserved in the Gardens of Florists, but as they have been produced accidentally from Seeds, they are but one Species; however, for the Satisfaction of the Curious, I shall here mention all the Varieties which have come to my Knowledge.

1. The common Crown Imperial; this is of a dirty red Colour.
2. The yellow Crown Imperial; this is of a bright yellow.
3. The bright red Crown Imperial; called *Fusai*.
4. The pale yellow Crown Imperial.
5. The yellow striped Crown Imperial.
6. The large flowering Crown Imperial.
7. The broad leaved late red Crown Imperial.
8. The double and triple crowned Imperial Crown.
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9. The double red Crown Imperial.
10. The double yellow Crown Imperial.
11. The Silver stripe dleaved Crown Imperial.
12. The yellow striped leaved Crown Imperial.

There are some few other Varieties which are mentioned in the Catalogues of the *Dutch* Florists, but their Distinctions are so minute, that they are not distinguishable, so I shall pass them over, as those here inserted are all that I have seen growing either in *England* or *Holland*, which deserved any Distinction.

The Crown Imperial hath a large round scaly Root of a yellow Colour, and a strong Odour of a Fox; the Stalk rises to the Height of four Feet or upward, it is strong, succulent, and garnished two Thirds of the Length on every Side, with long narrow Leaves ending in Points, which are smooth and entire; the upper Part of the Stalk is naked, a Foot in Length; then the Flowers come out all round the Stalk upon short Foot Stalks which turn downward, each sustaining one large spreading Bell-shaped Flower, composed of six Spear-shaped Petals; at the Base of each Petal is a pretty large Cavity, in which is situated a large white Nectarium, filled with a mellow Liquor. In the Center of the Flower is fixed a three cornered oblong Germen, upon which rests the single Style, which is the Length of the Petals, and is crowned by a spreading obtuse Stigma; round the Style there are six Awl-shaped Stamina which are shorter than the Style, and are terminated by oblong four cornered Summits. These Flowers hang downward, and above them arises a spreading Tuft of green Leaves which are erect, and from between these come out the Foot Stalks of the Flowers; when the Flowers decay, the Germen swells to a large hexagonal Capsule, shaped like a Water Mill, having six Cells filled with flat Seeds. This Plant flowers the Beginning of *April*, and the Seeds are ripe in *July*.

The Sort with yellow Flowers, that with large Flowers, and those with double Flowers, are the most valuable; but that which hath two or three Whorls of Flowers above each other, makes the finest Appearance; though this seldom produces its Flowers after this Manner the first Year after removing, but the second and third Year after planting, the Stalks will be taller, and frequently have three Tier of Flowers one above the other, which is called the triple Crown. The Stalks of this Sort frequently run flat and broad, when they produce a greater Number of Flowers than usual; but this is only a Luxuriancy of Nature, not constant, though many of the Writers have mentioned it as a particular Variety.

As this is one of the earliest tall Flowers of the Spring, so it makes a fine Appearance in the Middle of large Borders, at a Season when such Flowers are much wanted to decorate the Pleasure Garden; but the rank Fox-like Odour which they emit, is too strong for most People, so hath rendered them less valuable; for there is something very pleasing in the Sight of them at a Distance, so that were it not for the offensive Smell of Leaves and Flowers, it would be more frequently seen in all Gardens for Pleasure.

This may be propagated by Seeds, or Offsets from the Root; the first is too tedious for most of the *English* Florists, because the Plants so raised, are six or seven

Years before they flower; but the *Dutch* and *Flemish* Gardeners, who have more Patience, frequently raise them from Seeds, to get some new Varieties, which rewards their Labour. The Method of propagating these Flowers from Seeds, being nearly the same as for the Tulip, the Reader is desired to turn to that Article, where there are full Directions for it.

The common Method of propagating them here, is by Offsets from the old Roots, which will flower strong the second Year after they are taken off, but in order to have Plenty of these, the Roots should not be transplanted oftener than every third Year, by which Time each Root will have put out several Offsets, some of which will be large enough to flower the following Year, so may be planted in the Borders of the Flower Garden to remain, and the smaller Roots may be planted in a Nursery Bed to grow a Year or two according to their Size, therefore they should be sorted, and the smallest Roots planted in a Bed together, to remain there two Years, and the larger by themselves to stand one Year, by which Time they will have acquired Strength enough to flower, and may then be removed into the Pleasure Garden.

The Time for taking up these Roots, is in the Beginning of *July*, when their Stalks are decayed; they may be kept out of the Ground two Months, but they should be laid single in a dry shady Room, but not in Heaps, or in a moist Place, which will cause them to grow mouldy and rot. The Offsets should be first planted, for as these are small, they will be apt to shrink, if they are kept long out of the Ground.

As the Roots are large, they must not be planted too near other Flowers, and when planted in Beds by themselves, they should not be nearer than a Foot and a Half in the Rows, and two Feet Row from Row; they should be planted six Inches deep at least, especially the strong Roots; they delight in a light Soil, not too wet, nor very full of Dung; if any Dung is laid near them, it should be buried two or three Inches below the Roots.

FRITILLARIA CRASSA. See *Asclepias*.

FROST may be defined to be an excessive cold State of the Weather, whereby the Motion and Fluidity of the Liquors are suspended; or, it is that State of the Air, &c. whereby Fluids are converted into Ice.

By Frost Metals contract, or are shortened. *Mons. Auzout* found by Experiment, that an Iron Tube twelve Feet long, upon being exposed to the Air in a frosty Night, lost two Lines of its Length; but this may be supposed to be wholly the Effect of Cold.

On the contrary, Frost does not contract Fluids, but, swells or dilates them near one Tenth of their Bulk.

Mr. Boyle gives us several Experiments of Vessels made of Metals exceeding thick and strong, which being filled with Water, close stopped, and exposed to the Cold, the Water being expanded by freezing, and not finding either Room or Vent, burst the Vessels.

A strong Barrel of a Gun, with Water in it, being stopped close, and frozen, was rent the whole Length; and a small brass Vessel, five Inches deep, and two in Diameter, filled with Water, &c. and frozen, lifted up its Lid, which was pressed with a Weight of fifty-six Pounds.

There are also related many remarkable Effects of Frost on

in Vegetables. *Morery, Hist. de France*, says, That Trees are frequently scorched and burnt up with Frost, as with the most excessive Heat, and that even in so warm a Climate as *Provence*.

Mr. *Bobart* relates, That in the great Frost, *Anno* 1683, Oaks, Ashes, Walnut Trees, &c. were miserably split and cleft, so as they might be seen through, and this too with terrible Noises like the Explosion of Fire Arms; that the Clefts were not only in the Bodies, but continued to the larger Boughs, Roots, &c. *Philos. Transact.* N^o. 165.

Dr. *Derham* says, That the Frost in 1708, was remarkable through the greatest Part of *Europe*; and the greatest in Degree, if not the most universal, in the Memory of Man; that it extended throughout *England*, *France*, *Germany*, *Denmark*, *Italy*, but was scarce felt in *Scotland* and *Ireland*. All the Orange Trees and Olives in *Italy*, *Provence*, &c. and all the Walnut Trees throughout *France*, with an Infinity of other Trees, perished by the Frost.

Monf. *Goussier* says, They had a Gangrene on them, which he takes to be the Effect of a corrosive Salt, which corrupted and destroyed their Texture. He adds, That there is so much Resemblance between the Gangrene befalling Plants through Frost, and that which the Parts of Animals are liable to, that they must have some analogous Cause. Corrosive Humours burn the Parts of Animals, and the aerial Nitre, condensed, has the same Effects on the Parts of Plants. *Memoires de l'Academie Royale de Sciences*, An. 1709.

Dr. *Derham* says, That the greatest Sufferers in the Animal Kingdom were Birds and Insects, but Vegetables were much the greatest Sufferers; that few of the tender Sorts of Vegetables escaped the Severity of the Frost; Bays, Laurels, Rosemary, Cypress, Alaternuses, Phillyreas, Arbutuses, Laurustinuses, and even Furz, with most of the frutescent Herbs, as Lavenders, Abrotanums, Rue, Thyme, &c. were generally destroyed. He adds, that the Sap of the finer Wall Fruit was so congealed and destroyed, that it stagnated in the Limbs and Branches, and produced Disorders like the Chilblains in human Bodies, which would turn to Mortifications in many Parts of the Trees; that the very Buds of the finer Trees, both in the Leaf Buds, and Blossom Buds, were quite killed, and dried into a farinaceous Matter.

Dr. *Derham* relates it as a common Observation, That Vegetables suffered more from the Sun than from the Frost, in that the Sun, by melting the Snow, and opening the Ground, left it more exposed to the Rigour of the ensuing Night. It was likewise observed, at a Meeting of the Royal Society, That the Calamities which befall Trees, arose not purely from their being frozen, but principally from the Winds shaking and rocking them when they were frozen, which rent and parted their Fibres. *Philos. Transact.* N^o. 324.

In the Year 1728-9, there was a remarkable Frost, which continued for some Months, and destroyed a great Number of Trees and Plants in several Parts of *Europe*, a brief Account of which may not be improper to be here inserted.

The Autumn began with cold North and East Winds, and early in November the Nights were generally frosty,

though the Frost did not enter the Ground deeper than the Sun thawed the following Day; but toward the End of November the Winds blew extremely cold from the North, which was succeeded by a great Snow, which fell in such Quantities in one Night, as to break off large Arms, as also the Tops of many ever-green Trees, on which it lodged. After the Snow had fallen, it began to freeze again, the Wind continuing to blow from the North; the Days were dark and cloudy for some Time, but afterwards it cleared up, and the Sun appeared almost every Day, which melted the Snow where exposed to it, whereby the Frost penetrated deeper into the Ground. It was observable, that during these clear Days, a great Mist, or Vapour, appeared in the Evenings, floating near the Surface of the Ground until the Cold of the Night came on, when it was suddenly condensed, and disappeared. About the 8th of December, the Nights were extremely cold; the Spirits in the Thermometer fell 18 Degrees below the freezing Point, and on the 10th of the same Month the Frost was as severe as had been known in the Memory of Man; the Spirits of the Thermometer fell to 20 Degrees below the freezing Point. At this Time Numbers of Laurustinuses, Phillyreas, Alaternuses, Rosemary, Arbutus, and other ever-green Trees and Shrubs, began to suffer; especially such as had been trimmed up to Heads with naked Stems, or clipped late in Autumn. At this Time also there were great Numbers of large deciduous Trees disbarbed by the Frost, as Pear Trees, Plane Trees, Walnut Trees, and many other Sorts, and it was chiefly on the West and South West Side of the Trees, that the Bark came off.

About the Middle of December the Frost abated of its Intensity, and seemed to be at a stand till the 23d of the same Month, when the Wind blew extremely sharp and cold from the East, and the Frost increased again, continuing very sharp till the 28th Day, when it began to abate again, and seemed to be going off, the Wind changing to the South; but it did not continue long in this Point, before it changed to the East again, and the Frost returned, though it was not so violent as before.

Thus the Weather continued for the most part frosty, till the Middle of March, with a few Intervals of mild Weather, which brought forward some of the early Flowers; but the Cold returning, soon destroyed them; so that those Plants which usually flower in January and February, did not this Year appear till March, and before they were fully blown, were cut off by the Frost; of this Number were all the Spring Crocuses, Hepaticas, Persian Irises, Black Hellebores, Mezereons, &c.

The Cauliflower Plants which were planted out of the Beds in the open Ground, during the Intervals between the Frost, were most of them destroyed, or so much cut, that they lost most of their Leaves; the early Beans and Peas were most of them killed, and many Fruit and Forrest Trees, which had been lately removed, were quite destroyed. The Loss was very great to some curious Persons, who had been many Years endeavouring to naturalize great Numbers of exotic Trees and Shrubs, abundance of which were either totally killed, or destroyed to the Surface of the Ground;

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Ground; amongst this Number there were many Sorts destroyed, which had endured the open Air many Years, without receiving the least Injury from the Cold, such as Passion Flowers, Cork Trees, Cistuses, Rosemary, Stæchas, Sage, Maltich, and some others. In some Places the young Ash and Walnut Trees were killed; but when the Frost went off, there appeared to have been much more Damage done in the Gardens, than there really was, which occasioned many People to dig up and destroy large Quantities of Trees and Shrubs, which they supposed were killed; whereas those who had more Patience, and suffered them to remain, fared better; for great Numbers of them shot out again, some from their Stems and Branches, and others from their Roots; the following Summer.

Nor was the Frost more severe in *England*, than in other Parts of *Europe*, but on the contrary, in Comparison, favourable; but in the Southern Parts of *France*, the Olives, Myrtles, Cistuses, Alaternuses, and several other Trees and Shrubs, which grow there almost spontaneously, were either destroyed, or killed to their Roots, and about *Paris*, and the Northern Parts of *France*, the Buds of their Fruit Trees were destroyed, although they remained closed, so that there were very few Blossoms which opened that Spring. The Fig Trees were in several Parts of *France* quite killed, and in *England* their tender Branches were destroyed, so that there was very little Fruit on those Trees the following Summer, except where they were protected from the Frost.

In *Holland* the Pines and Firs, with several other Trees, which are Natives of cold Countries, were greatly injured by the Cold; and most of the Trees and Shrubs, which were brought from *Italy*, *Spain*, or the South Parts of *France*, which had been planted in the full Ground in that Country, were entirely killed, though many other Sorts which had been brought from *Virginia* and *Carolina*, escaped very well in the same Gardens; but the Person who suffered most in that Country, was the learned *Dr. Boerhaave*, who had been several Years endeavouring to naturalize as many exotic Trees and Shrubs as he could possibly obtain from the several Parts of the World, great Numbers of which were entirely destroyed by the Frost this Winter.

In some Parts of *Scotland*, they not only lost many of their curious Flowers, Plants, and Trees, but great Numbers of Sheep, and other Cattle, were buried under the Snow, where they perished, and many poor People, who went to look after their Cattle, were equal Sufferers with them, being buried in the Snow, which in some Places fell 8 or 9 Feet deep in one Night.

In the Year 1739-40, we had another severe Winter, which did great Mischief to the Gardens, Fields, and Woods, the Effects of which are yet, and will be many Years, felt in *Europe*. Some Particulars of these Depredations, may not, perhaps, be unacceptable to the Reader, if they are here mentioned.

The Wind set in blowing from the North and North East about the Autumnal Equinox, and continued to blow from the same Quarter, with little Variation, upward of six Months. Early in *November* there was a continued sharp Frost for nine Days, in which Time

the Ice upon large Ponds, and other standing Waters, was frozen so hard as to bear Persons who skated thereon; but toward the End of *November* the Frost abated, and there was little more than slight Morning Frosts until *Christmas* Day, when it froze pretty hard that Morning, and continued every Morning so to do; but on the 28th of *December*, the Wind blew with great Strength from the North East, and brought on severe Cold; that Night the Frost penetrated very deep into the Ground, and the next Day, viz. the 29th, the Wind changed to the Southward of the East, and blew with great Fury; the Thermometer fell this Day to twenty-five Degrees below Frost; in the Morning some little Snow fell, but the Violence of the Wind carried it off; the Cold still increasing, the Waters were all frozen over, and that Day it was so intense, as to freeze the Water of the River *Thames*, which was raised by the Force of the Wind into Ice, before it fell down again. The Wind continued to blow with the same Force, and from the same Quarter, all the 30th Day, the Cold still increasing, so that at this Time the Frost penetrated into most of the Green-houses in *England*, but especially into all those whose Fronts had the least Inclination to the East, and such of them as fronted the South West escaped best, where the back Walls were of a sufficient Thickness to keep out the Frost; the Spirits in the Thermometer fell in the Night of the 30th Day to thirty-two Degrees below the freezing Point, which was lower than it had been known in *England* before; the Violence of the Wind made it very troublesome for Persons of the most robust Constitutions to be abroad, and this also caused the Frost to penetrate through thick Walls, and in the Space of two Days, the ever-green Trees and Shrubs appeared as if they had been scorched by Fire, so that they seemed to have no Life; the only Trees of all the Sorts of Ever-greens which retained their Verdure, at this Time, were the *Portugal* Laurel, *Savin*, and shrubby *Hartwort*; these in the Midst of this severe Frost remained unhurt, when all the others were as brown as if they had been dead a Year; and it was very late in the Spring before any of them resumed their usual Verdure; during these severe Days there had but little Snow fallen, so that the Frost penetrated deep in the Ground, and destroyed the Roots of great Part of the Vegetables, where they were not well secured; the Artichoke Roots were most of them killed in all the Kitchen Gardens; some few only escaped, these were such as were not intended to be preserved. A single Row of these Roots, which were growing in a Place where a great Quantity of Dung had been wheeled over them, whereby the Ground was rendered as hard as that of a common Foot Way, though there was no Covering upon these Roots, yet they survived the Frost, and did well; another Parcel, which was growing near a Tan Yard, where, by accident some Tan had been thrown, were preserved, so that from some of these Accidents we were so lucky as to retrieve the good Kind of Artichoke, which the *English* Gardens were so famous for being stocked with.

By the sharp piercing Winds the Grass was almost totally burned up, so that there was not the least Verdure to be seen in the Fields, and in many Places the sweetest and

and best Kinds of the Herbage were entirely killed, so that there remained only the strong rough Kinds of Grass, whereby the Pastures were in general much damaged; but on the 31st Day in the Evening, the Wind being much abated, the Severity of the Frost was not so great, and there seemed an Appearance of a Thaw on the first and second of *January*, but on the third in the Evening the Frost set in again with great Violence; and on the fourth of *January*, in the Morning, the Thermometer was fallen one Degree lower than it had been before. The same Morning there was the greatest hoary Frost, which had been seen, the Woods, Trees, and Hedges, appeared as if they had been covered with Snow; and although there was no Wind stirring, yet the Air was so sharp and penetrating, as to render it difficult to endure the Cold, even with great Exercise.

The Timber Trees suffered greatly that Morning, especially the Oaks, which were split with great Violence; and the Noise in the Woods that Morning, resembled that of great Branches breaking down in every Part of the Woods, and when heard at a Distance, like the Firing of Guns. This was little attended to at the Time, but the Timber which has been since fallen, sufficiently proves the great Damage which the Woods then sustained; nor was it here the Calamity stopped, for the Oaks in general had received so much Injury from the Frost, as to occasion such a Weakness and Distemper among them, that the following Spring they were infested with Insects to such a Degree, that their Leaves were eaten and entirely destroyed by them; so that at *Midsummer* the Trees were as naked as if it had been the Beginning of *April*, and this Distemper continued for two Years after, almost as bad as at first, and has lessened by Degrees, as the Trees recovered their Strength; and where they were old and weak, they have not yet got the better of this Distemper.

The Herbage was also so much weakened by the Severity of the Frost, as not to be able to resist the Attack made upon it by Insects, so that innumerable Quantities of them were discovered in the Pastures in many Parts of *Europe*, beginning first in the Northern Countries, and afterward spreading to the South; and these Insects in many Places were so numerous, as to destroy the Sward of Grass, and it is to be feared the Distemper which has so long raged among the Cattle is owing to this Cause, for where-ever the Distemper has spread, it has been observed, that Numbers of these Insects have harboured about the Roots of the Grass; and as a farther Proof of this, it has constantly been remarked, that, when these Grubs are changed into a Sort of Beetle, and take their Flight (which is commonly about the Beginning of *May*), the Distemper ceases, and when these Beetles have deposited their Eggs in Autumn, the Distemper has raged again. Another Remark has been made, that these Beetles always choose to deposit their Eggs not at a great Distance from Rivers, or large Pieces of Water, and in such Places the Cattle have been most attacked. There might be many other Circumstances mentioned in favour of this Opinion, as also the several Experiments which have been made by some of the Members of the Academy of Sciences at *Paris*, which are sufficient to prove, that the Distemper is not infectious, nor can be communicated by the Cattle, notwithstanding it has

been treated as such in many Countries, to the immense Loss to the Publick of such Numbers of Cattle, and their Hides; but this may require a particular Treatise, therefore I shall not enlarge farther on this Head at present.

The Frost still continued very hard, till toward the End of *January*, but not so violent as at the Beginning; for had the Wind continued to blow with so much Force as it had done the three first Days of the Frost, for any considerable Time longer, there would have been few Vegetables able to have resisted the Cold, nor would the Animal Kingdom have fared much better; for the Cold was so intense during those few Days, as to kill several of the weaker Sort of Cattle, where they were much exposed to the Wind.

The Walnut, Ash, and several other Trees, had most of their Shoots of the former Year destroyed, which caused them to be very late before they put out new Shoots the following Spring, and these Shoots were produced from the two and three Years Branches. The Fig Trees in many Places were killed almost to the Ground, especially those which were growing against the best aspect Walls, for those on the North and North West Aspects, as also the old Standard Fig Trees, escaped better; but all those Stools and Layers of these Trees, which were growing in the Nursery Gardens, were so much injured by the Frost, as not to be recovered under three Years, during which Time there were scarce any of these Plants to be sold. The Layers of Vines, as also of the Plane Tree, in the Nurseries, were killed to the Ground, and the old Stools so much injured, that they had better have been dug up, and thrown away, than to have continued them; for in ten Years they have not recovered their former Vigour, making their Shoots so late in the Summer, that their Wood had not Time to harden, and the first Frost in Autumn frequently kills them half Way to the Ground.

Many other deciduous Trees were equal Sufferers by this severe Frost, and the Ever-greens were more generally injured, and Abundance of them killed. The Pine and Pinaster were so much hurt, as to lose all their Verdure, and in some Places the young Plants of the former Sort were entirely killed. The Rosemary, Lavender, Stœchas, Sage, and many other aromatick Plants, were in many Places quite destroyed, so that it was two or three Years before the Markets could be supplied with these; and in general the esculent Plants in the Kitchen Gardens were killed, so that for some Months the Markets were not supplied with any Quantity of Garden Stuff. The Flower Gardens were great Sufferers by this Winter; for as the Seasons for some Years before had been very temperate, few Persons had made any Provision for a hard Winter, and the Cold setting in so very intense at the Beginning, the Mischief was done before covering could be provided.

The Wheat in many Parts of *England*, but especially in the open common Fields, was very much hurt, particularly on the Top of the Ridges, where, in several Places, there were broad naked Spaces on the Middle of the Ridges, which in the Spring appeared like so many Foot Paths; and as the Spring following was very dry, and the Wind continued to blow from the North and East, these piercing Winds entered the Ground, which had

had been loosened by the Frost, and dried up the tender Roots of the Corn, to the great Prejudice of it; but some of the more expert Farmers, who rolled their Wheat after the Frost was over, were well repaid by the great Crops which their Land produced.

Were I to enter into all the Particulars of the Damages sustained by this severe Frost in the Gardens and Fields, it would swell this Work beyond the Limits intended; so I hope, on the other Hand, I shall not be condemned for having inserted thus much, since, by the Mention of these Things, Persons may be instructed how to save many of their valuable Plants in future Winters, as also what Sorts are more liable to Danger from Frosts, than others.

FRUCTIFEROUS [*fructifer*, Lat.] Fruit-bearing, fruitful.

FRUIT is the Production of a Tree or Plant, for the Propagation or Multiplication of its Kind; in which Sense Fruit includes all Kinds of Seeds, with their Furniture, &c. Botanists use it to signify, properly, that Part of a Plant wherein the Seed is contained, which the *Latins* call *Fruſtus*, and the *Greeks* *Καρπός*.

The Fruit of some Plants are produced singly, as are their Flowers, and sometimes in Clusters, as in most Fruit Trees, which are also fleshy, but in many Plants they are dry.

The Word Fruit is also used to signify an Assemblage of Seeds in a Plant; as in a Pea, Bean, Ranunculus, &c. and in its general Signification, for all Kinds of Grain, whether naked, or inclosed in Cover, *Capsula*, or Pod, whether bony, fleshy, skinny, or membranous.

Fruit is the Product of the Flower, or that for whose Production, Nutrition, &c. the Flower is intended.

The Structure and Parts of different Fruits are different in some Things, but in all the Species the essential Parts of the Fruit appear to be only Continuations or Expansions of those which are seen in the other Parts of the Tree.

Dr. Beale suggests some very good Reasons for a direct Communication between the remotest Parts of the Tree and the Fruit; so that the same Fibres or Stamina, which constitute the Root, Trunk, and Boughs, are extended into the very Fruit.

Thus, if you cut open an Apple transversely, you will find it to consist chiefly of four Parts, *viz.* 1st, a Skin, or *Cortex*, which is only a Production of the Skin or outer Bark of the Tree. 2dly, A *Parenchyma*, or Pulp, which is an Expansion and Intumescence of the Blee, or inner Bark of the Tree. 3dly, The Fibres, or Ramifications of the woody Part of the Tree. 4thly, The Core, which is the Produce of the Pith, or *Medulla* of the Plant, indurated or strengthened by Twigs of the Wood and Fibres inosculated therewith. This serves to furnish a Cell, or Lodge, for the Kernels; filtrates the Juice of the *Parenchyma*, and conveys it, thus prepared, to the Kernel.

Of the Fibres, Authors generally reckon fifteen Branches, of which ten penetrate the *Parenchyma*, and incline to the Basis of the Flower; the other five ascend more particularly from the Pedicle, or Stalk, and meet with the former at the Base of the Flower, to which Branches the *Capsula*, or Coats of the Kernels, are fastened.

These Branches, being first extended through the *Parenchyma* to the Flower, furnish the necessary Matter for the Vegetation of it; but as the Fruit increases, it intercepts the Aliment, and thus the Flower is starved, and falls off.

In a Pear there are five Parts to be distinguished, *viz.* the Skin, *Parenchyma*, Ramification, Stone, and *Acetarium*.

The three first Parts are common to the Apple. The Stone, observed chiefly in Choke Pears, or Breaking Pears, is a Congeries of strong Corpuscles, that are dispersed throughout the whole *Parenchyma*, but in the greatest Plenty, and closest together about the Center, or *Acetarium*; it is formed of the stony, or calculeous Part of the nutritious Juice.

The *Acetarium* is a Substance of a tart acid Taste, of a globular Figure, inclosed in an Assemblage of several of the stony Parts before-mentioned.

In a Plum, Cherry, &c. there are four Parts, *viz.* a Coat, *Parenchyma*, Ramification, and *Nucleus*, or Stone. The Stone consists of two very different Parts; the external, or harder Part, called the Stone, or Shell, is a Concretion of the stony, or calculeous Parts of the nutritious Juice, like the Stone in Pears, within it. The inner, called the Kernel, is soft, tender, and light, being derived from the Pith, or *Medulla* of the Tree by seminal Branches, which penetrate the Base of the Stone.

The Nut, or Acorn, consists of a Shell, *Cortex*, and *Medulla*; the Shell consists of a Coat and *Parenchyma*, derived from the Bark and Wood of a Tree.

The *Cortex* consists of an inner and outer Part, the first is a Duplication of the inner Tunic of the Shell; the second is a mossy Substance, derived from the same Source as the *Parenchyma*, of the Shell. But Authors are not agreed, whether the *Medulla*, or Pulp of the Kernel does arise from the Pith of the Tree, or the cortical Part thereof.

Berries, as the Grape, &c. contain (besides three general Parts, *viz.* Coat, *Parenchyma*, and Ramification) Grains of a stony Nature, to do the Offices of Seeds.

Fruits in general are serviceable in guarding, preserving, and feeding the inclosed Seed, in filtrating the coarser, more earthy, and strong Parts of the nutritious Juice of the Plant, and retaining it to themselves, sending none but the most pure, elaborated, and spirituous Parts to the Seed, for the Support and Growth of the tender delicate Embryo, or Plantule, which is therein contained.

FRUMENTUM INDICUM. See Zea.

FRUTEX, a Shrub; a Vegetable of a Genus between a Tree and an Herb, but of a woody Substance.

It is pretty difficult to determine wherein most of the Writers on Gardening and Agriculture, have made the Distinction between Trees and Shrubs, or where to fix the Difference, or Boundary, between the Trees and Shrubs, to say where one ends, and the other begins, for that cannot be determined by their Growth; therefore the best Definition which can be made of a Shrub, to distinguish it from a Tree, is its sending forth many Stems from the Roots, whereas the Trees have a single Trunk, or Body.

FRUTEX PAVONIUS. See Poinciana.

FUCHSIA. *Plum. Nov. Gen. 14. Lin. Gen. Plant.*

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1097. So named by Father Plumier, in Honour of Leonard Fuchs, a learned Botanist.

The Characters are,

The Flower hath no Empalement; it hath one Petal, with a closed Tube, which is slightly cut into eight Parts at the Brim, ending in acute Points; it hath four Stamina the Length of the Tube, which are terminated by obtuse Summits. The oval Germen is situated under the Flower, supporting a single Style, crowned by an obtuse Stigma. The Germen becomes a succulent Berry with four Furrows, having four Cells, containing several small oval Seeds.

We know but one Species of this Genus at present, viz.

FUCHSIA. Lin. Sp. Plant. 1191. This is the *Fuchsia triphylla*, flore coccineo. Plum. Nov. Gen. Three leaved *Fuchsia*, with a scarlet Flower.

This Plant is a Native in the warmest Parts of America; it was discovered by Father Plumier, in some of the French Islands in America, and was since found by the late Dr. William Houssoun, at Cartagena, in New Spain, from whence he sent the Seeds into England.

This is propagated by Seeds, sown in Pots filled with rich light Earth, and plunged into a hot Bed of Tanners Bark, and treated in the same Way as other Seeds from warm Countries. In about a Month or six Weeks after the Seeds are sown, the Plants will begin to appear, when they should be carefully cleared from Weeds, and frequently refreshed with Water to promote their Growth; when they are about two Inches high, they should be shaken out of the Pots, and separated carefully; then plant each into a small Pot filled with light rich Earth, and plunge them again into a hot Bed of Tanners Bark, being careful to screen them from the Sun, until they have taken new Root, after which Time they must have fresh Air admitted to them every Day in Proportion to the Warmth of the Season, and should be frequently watered. As the Season advances and becomes warm, the Glasses of the hot Bed should be raised higher, to admit a greater Share of Air to the Plants, to prevent their drawing up weak; and when they are grown so tall as to reach the Glasses, they should be removed into the Bark Stove, and plunged in the Tan Bed. In Winter they require to be kept very warm, and at that Season must not have much Water, but in Summer it must be often repeated.

These Plants are too tender to thrive in the open Air in this Country, even in the hottest Part of the Year; therefore they should constantly remain in the Stove, observing to let in a large Share of fresh Air in Summer, but in Winter they must be kept warm; with this Management the Plants will produce their Flowers, and make a beautiful Appearance in the Stove, amongst other tender exotick Plants.

FUMARIA. Lin. Gen. Plant. 760. Tourn. Inst. R. H. 421. Tab. 237. Fumatory; in French, *Fumeterre*.

The Characters are,

The Empalement of the Flower is composed of two equal Leaves placed opposite. The Flower is of the ringent Kind, approaching near to the Butterfly Flowers. The upper Lip is plain, obtuse, indented at the Top, and reflexed; the Nectarium at the Base of this is obtuse, and little prominent. The under Lip is like the upper in all its Parts, but the Base is keel-shaped; the Nectarium at the Base is less prominent. The Chaps of the Flower is four cornered, ob-

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tuse, and perpendicularly bifid; there are two equal broad Stamina in each Flower, included in the two Lips, each being terminated by three Summits. In the Center is situated an oblong Germen, supporting a short Style, crowned by an orbicular compressed Stigma. The Germen afterward becomes a short Pod with one Cell, including roundish Seeds.

The Species are,

1. FUMARIA pericarpis monospermis racemosis, caule diffuso. Lin. Sp. Plant. 700. Fumatory with Seed Vessels growing in a Racemus, with a single Seed, and a diffused Stalk. This is the *Fumaria officinarum* & *Dioscoridis*, flore purpureo. C. B. 143. The common Fumatory with a purple Flower.

2. FUMARIA pericarpis monospermis spicatis, caule erecto, foliis filiformibus. Sauv. Monsp. 263. Fumatory with Seed Vessels growing in a Spike, with one Seed, an upright Stalk, and Thread-like Leaves. *Fumaria minor tenuifolia*. C. B. Lesser narrow leaved Fumatory.

3. FUMARIA siliquis linearibus tetragonis, caulibus diffusis acutangulis. Lin. Sp. Pl. 700. Fumatory with narrow four-cornered Pods, and diffused Stalks, having acute Angles. *Fumaria sempervirens* & *florens*, flore albo. Flor. Bat. Ever-green Fumatory with a white Flower.

4. FUMARIA siliquis teretibus, caulibus diffusis, angulis obtusis. Fumatory with taper Pods, and diffused Stalks, having obtuse Angles. This is the *Fumaria lutea*. C. B. Yellow Fumatory.

5. FUMARIA siliquis linearibus, foliis cirrbiferis. Lin. Sp. Plant. 701. Fumatory with narrow Pods, and Leaves having Claspers. This is the *Fumaria clavicularis donata*. C. B. P. 143. Fumatory with Tendrils.

6. FUMARIA pericarpis monospermis racemosis, foliis scandentibus subcirrbosis. Lin. Sp. Plant. 701. Fumatory with Seed Vessels growing in a Racemus, with one Seed, and climbing Leaves, having short Tendrils. This is the *Fumaria major scandens*, flore pallidiore. Raii. Hist. 405. Greater climbing Fumatory with a paler Flower.

7. FUMARIA caule simplici, bracteis longitudine florum. Lin. Sp. Plant. 699. Fumatory with a single Stalk, and Bractæ as long as the Flowers. This is the *Fumaria bulbosa*, radice cavâ, major. C. B. P. 143. Greater bulbous Fumatory with a hollow Root.

8. FUMARIA caule simplici, bracteis brevioribus multifidis, radice solidâ. Fumatory with a single Stalk, shorter many pointed Bractæ, and a solid Root. This is the *Fumaria bulbosa*, radice non cavâ, major. C. B. P. 144. Greater bulbous Fumatory with a solid Root.

9. FUMARIA scapo nudo. Hort. Cliff. 351. Fumatory with a naked Stalk. This is the *Capnorbis Americana*. Boerb. Ind. Alt. 1. 309. and the *Fumaria tuberosa insipida*. Cornut. 129. Tuberous insipid Fumatory.

10. FUMARIA siliquis globosis inflatis. Hort. Upsal. 207. Fumatory with globular inflated Pods. This is the *Cysticapnos Africana scandens*. Boerb. Ind. Alt. 1. 310. Climbing African *Cysticapnos*.

11. FUMARIA foliis tritermatis, foliolis cordatis. Lin. Sp. Plant. 700. Fumatory with Leaves composed of three trifoliate small Leaves, which are Heart-shaped. This is the *Fumaria enneaphyllos Hispanica saxatilis*. Bocc. Mus. 2. Nine leaved Rock Fumatory of Spain.

12. FUMARIA siliquis linearibus paniculatis, caule erecto. Hort. Upsal. 207. Fumatory with narrow Pods growing

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growing in Panicles, and an upright Stalk. This is the *Capnoides*. *Tourn. Inst. R. H.* 423. Bastard Fumatory.

The 1st Sort is the common Fumatory used in Medicine. This grows naturally on arable Land in most Parts of *England*; it is a low annual Plant, and flowers in *April*, *May*, *June*, and very often from Plants which rise late in Summer, there will be a second Crop in Autumn. The Juice of it is greatly commended for bilious Cholicks. It is never cultivated in Gardens.

The 2d Sort grows naturally in the South of *France*, *Spain*, and *Portugal*, but is preserved in Botanic Gardens for Variety. It is an annual Plant, which rises from the scattered Seeds better than when it is sown with Care; the Stalks of this grow more erect; the Leaves are very finely divided, and the Flowers grow in a close Spike; they are of a deep red Colour, and flower about the same Time as the common Sort.

The 3d Sort grows naturally on the Borders of the *Mediterranean Sea*; it was first brought to *England* from *Tangier*. This is a perennial Plant, sending out from the Root many branching Stalks, which rise about 6 or 8 Inches high, growing in Tufts or Bunches; the Leaves are very much divided, the Stalks angular, and the Flowers grow in loose Panicles on naked Foot Stalks, which come out from the Divisions of the Branches; they are of a whitish yellow Colour, and there is a Succession of them most part of the Year.

The 4th Sort is very like the 3d, and by some it is supposed to be only a Variety of that, but is undoubtedly a distinct Species; for I have cultivated both more than thirty Years, and never yet found either of them to vary. The Stalks of this Sort have blunt Angles, whereas those of the 3d are acute; they are of a purplish Colour, and the Flowers grow in looser Panicles, each having a longer Foot Stalk than those of the other; they are of a bright yellow Colour, and there is a Succession of them great part of the Year.

These 2 Sorts continue green all the Year, and except in very severe Frost, are always in flower, and make a pretty Appearance; they grow best on Walls or Rocks, and are very proper for the Joints of Grottos, or any Rock-work; where, if a few are planted, or the Seeds scattered, they will multiply fast enough from their scattering Seeds, which are cast out of the Pods by the elastick Spring of the Valves when ripe, to a considerable Distance; and as they require no Care to cultivate them, they should not be wanting in Gardens.

The 5th Sort grows in stony and sandy Places, in some Parts of *England*; it is an annual Plant with trailing Stalks, sending out Claspers from the Leaves, which fasten to any of the neighbouring Plants. It flowers in *May* and *June*, but is never cultivated in Gardens.

The 6th Sort is an annual Plant with many trailing Stalks, which grow about a Foot long, sending out a few short Tendrils, whereby they fasten to any neighbouring Support; the Flowers come out from the Side of the Stalks in loose Bunches, they are of a whitish herbaceous Colour, with a purple Spot on the upper Lip. This flowers in *May* and *June*. It grows in *France* and *Italy*, on stony Places in the Shade.

The 7th Sort grows naturally in the South of *France* and *Italy*, and was some Years past preserved in the *English* Gardens for Ornament, but is now rarely to be

found here; it was titled *Radix cava*, or hollow Root, from its having a pretty large tuberos Root hollowed in the Middle. The Stalk of this Sort rises about six Inches high, and does not divide, but is garnished toward the Bottom with one ramous Leaf, somewhat like the common Fumatory, but the Lobes are broader; the Flowers grow in a Spike at the Top of the Stalk, of a pale purplish Colour, and appear in *May*. This Plant delights in the Shade, and is multiplied by Offsets, for it rarely ripens Seeds in *England*.

The 8th Sort is common in many of the old Gardens in *England*; it grows naturally in the South of *France*, in *Germany* and *Italy*. This hath a pretty large round solid Root of a yellowish Colour, from which come out branching Leaves like those of the last Sort, but the Lobes are longer; the Flowers grow in Spikes on the Tops of the Stalks, they are of a purple Colour, and come out early in *April*. The Stalks of this Sort are single, and rise about 4 or 5 Inches high.

There is a Variety of this with green Flowers, which is mentioned in most of the Books; but all the Plants of this Sort which I have yet seen, are only abortive, having no real Flower, only a green Bractea, which has been generally taken for the Flowers: There is also mentioned a larger Sort, but if there is one really different from the common Sort, I have not seen it in the *English* Gardens, nor the yellow and white flowering Sorts, which are also mentioned in many of the Books.

The 9th Sort grows naturally in *North America*; this hath a scaly Root about the Size of a large Hazel Nut, from which comes out 3 or 4 Leaves on slender Foot Stalks; these are divided into 3 Parts, each of these Parts is composed of many smaller Divisions, which have narrow Lobes divided into 3 Parts almost to the Bottom; the Flower Stalk is naked, and 8 or 9 Inches long, terminated by 4 or 5 Flowers, growing in a loose Spike; these have two Petals, which are reflexed backward, and form a Sort of Fork toward the Foot Stalk, and at their Base are two horned Nectariums, standing horizontal. The Flowers are of a dirty white Colour and appear in *May*, but rarely produce Seeds here.

This is propagated by Offsets from the Root, it loves a shady Situation and a light Soil; the best Time to transplant the Roots is in Autumn, when the Leaves are decayed, for it shoots early in the Spring, therefore it would not be safe to remove them at that Season.

The 10th Sort grows naturally at the *Cape of Good Hope*; this is an annual Plant, with trailing Stalks which are 2 or 3 Feet long, dividing into many smaller, which are garnished with small branching Leaves shaped like those of the common Fumatory, but end with Tendrils, which clasp to any neighbouring Plants, and thereby the Stalks are supported; the Flowers are produced in loose Panicles, which proceed from the Side of the Stalks; they are of a whitish yellow Colour, and succeeded by globular swollen Pods, in which are contained a Row of small shining Seeds.

This is propagated by Seeds, which should be sown upon a moderate hot Bed in the Spring, and when the Plants are fit to remove, they must be each planted in a small Pot filled with light Earth, and plunged again into the hot Bed, where they must be shaded from the Sun till they have taken new Root; after which they should

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have a large Share of Air admitted to them at all Times in mild Weather, to prevent their drawing up weak; and as soon as the Season is favourable, they should be inured to bear the open Air, into which they may be removed the Beginning of *June*, when they may be shaken out of the Pots, preserving all the Earth to their Roots, and planted in a warm Border, where their Stalks should be supported with Sticks to prevent their trailing on the Ground; and in *July* the Plants will flower, and continue a Succession of Flowers till the Frost destroys the Plants; the Seeds ripen in Autumn.

The 11th Sort grows naturally upon old Walls, or rocky Places in *Spain* and *Italy*; this hath weak trailing Stalks which are much divided, and are garnished with small Leaves divided into 3 Parts, each of which hath 3 Heart-shaped Lobes; the Flowers are produced in small loose Panicles from the Side of the Stalks, they are of a greenish white, and appear most of the Summer Months. It is an abiding Plant, which propagates itself by the Seeds that scatter, and thrives best in a shady Situation, and on old Walls.

The 12th Sort is an annual Plant with an upright Stalk, which grows a Foot and a Half high, round and very smooth, sending out several Branches upward; these are garnished with smooth branching Leaves of a pale Colour, divided like the common Sort, but the small Leaves are larger and more obtuse; the Flowers are produced in loose Panicles from the Sides of the Stalks, and at the Extremity of the Branches; they are

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of a pale purple, with yellow Chaps (or Lips); these are succeeded by taper narrow Pods, an Inch and a Half long, which contain many small shining black Seeds. This flowers during the Summer Months, and the Seeds ripen in *July*, *August*, and *September*. If the Seeds are permitted to scatter, the Plants will come up without Trouble, and require no Care but to thin them where they are too close, and keep them clean from Weeds.

These Plants may be suffered to grow on Walls, and in some abject Part of the Garden; for if they are permitted into the Borders of the Pleasure Garden, they will scatter their Seeds, and become troublesome Weeds; but they are very proper to grow on Ruins, or on the Sides of Grottos or Rock Work, where, by their long Continuance in flower, they have a good Effect.

The 5th, 6th, 7th, and 8th Sorts are propagated by Offsets, as other bulbous Roots; these produce their Flowers in the Beginning of *April*, and are very pretty Ornaments to Borders in a small Flower Garden. They are extreme hardy, but do not increase very fast, seldom producing Seeds with us; and their Bulbs do not multiply much, especially if they are often transplanted. They love a light sandy Soil, and should be suffered to remain 3 Years undisturbed, in which Time they will produce many Offsets. The best Season for transplanting them is from *May* to *August*, when the Leaves begin to die; for if they are taken up when their Leaves are fresh, it will greatly weaken their Roots.

FURZ. See Genista.

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GALANTHUS. *Lin. Gen. Plant.* 362. *Narcissus-leucoium*. *Tourn. Inst. R. H.* 387. The Snow-drop; in *French*, *Perceneige*.

The Characters are,

The Spatha or Sheath of the Flower is oblong, blunt, and compressed, This opens Sideways, and becomes a dry Skin; the Flower has three oblong concave Petals, which spread open, and are equal; in the Bottom is situated the three leaved Nectarium, which is cylindrical, obtuse, and indented at the Top; under the Flower is situated the oval Germen, supporting a slender Style, which is longer than the Stamina, crowned by a single Stigma; this is attended by six short hairy Stamina, terminated by oblong pointed Summits, which are gathered together. The Germen becomes an oval Capsule which is obtuse and three cornered, opening in three Cells, which are filled with roundish Seeds.

This Plant, as also the great Snow-drop, was by Dr. Tournefort ranged together under the Title of *Narcissus-leucoium*; which being a compound Name, Dr. Linnaeus has altered it to this of *Galanthus*; and has separated the great Snow-drop from this, and given the simple Name of *Leucoium* to that Genus.

We know but one Species of this Genus, viz.

GALANTHUS. *Lin. Hort. Cliff.* 134. The common Snow-drop. This is the *Leucoium bulbosum trifolium*

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minus, C. B. P. The least bulbous Snow-drop with three Leaves.

There is a Variety of this with double Flowers.

These Flowers are valued for their early Appearance in the Spring, for they usually flower in *February* when the Ground is often covered with Snow. The single Sort comes out the first, and though the Flowers are but small, yet when they are in Bunches, they make a very pretty Appearance; therefore these Roots should not be planted single, as is sometimes practised by Way of Edging to Borders; for when they are so disposed, they make very little Appearance. But when there are twenty or more Roots growing in a close Bunch, the Flowers have a very good Effect; and as these Flowers thrive well under Trees or Hedges, they are very proper to plant on the Sides of Wood Walks, and in Wilderness Quarters; where, if they are suffered to remain undisturbed, the Roots will multiply exceedingly. The Roots may be taken up the latter End of *June*, when their Leaves decay, and may be kept out of the Ground till the End of *August*, but they must not be removed oftener than every third Year.

GALE. See Myrica.

GALEGA. *Lin. Gen. Plant.* 770. *Tourn. Inst. R. H.* 398. *Tab.* 222. Goat's-rue.

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The Characters are,

The Empalement of the Flower is short, tubulous, and of one Leaf, indented in 5 Parts. The Flower is of the Butterfly Kind; the Standard is oval, large, and reflexed; the Wings are near the Length of the Standard; the Keel erect, oblong, and compressed; the under Side toward the Point is rounded, but the upper acute; there are 10 Stamina which join above their Middle, and are terminated by small Summits. In the Center is situated a narrow, cylindrical, oblong Germen, supporting a slender Style, crowned by a Stigma terminated by a Puncture. The Germen becomes a long pointed Pod, inclosing several oblong Kidney shaped Seeds.

The Species are,

1. *GALEGA foliolis lanceolato-linearibus, siliquis tenuioribus*. Goat's-rue with narrow Spear-shaped Leaves and narrow Pods. This is the *Galega vulgaris, floribus caeruleis*. C. B. P. Common Goat's-rue with blue Flowers.

2. *GALEGA foliolis lanceolatis obtusis, floribus spicatis longioribus, siliquis crassioribus*. Goat's-rue with obtuse Spear-shaped Leaves, Flowers growing in longer Spikes, and thicker Pods. This is the *Galega Africana, floribus majoribus siliquis crassioribus*. Fourn. Inst. African Goat's-rue, with larger Flowers and thicker Pods.

3. *GALEGA foliis ovatis, floribus paniculatis alaribus, caule fruticoso*. Goat's-rue with oval Leaves, Flowers growing in Panicles from the Sides of the Stalks, which are shrubby. This is the *Galega Americana, foliis subrotundis, floribus coccineis*. Houst. Mss. American Goat's-rue with roundish Leaves and scarlet Flowers.

The 1st Sort grows naturally in Italy and Spain, but is propagated in the English Gardens for medicinal Use. This hath a perennial Root, composed of many strong Fibres, which are frequently jointed, from which arise many channelled hollow Stalks, from 2 to 3 Feet high, garnished with winged Leaves, composed of six or seven Pair of narrow Spear-shaped Lobes, terminated by an odd one, these are smooth and entire; the Flowers terminate the Stalks growing in Spikes, they are of the Pea Blossom Shape, of a pale blue Colour, and are disposed in loose Spikes. They appear in June, and are succeeded by taper Pods about one Inch and a Half in Length, having one Row of Kidney-shaped Seeds, which ripen toward the End of August.

There is a Variety of this with white Flowers, and another with variegated Flowers, which have accidentally been produced from Seeds, so are not constant.

The 2d Sort grows naturally in Africa; this differs from the former, in having larger Leaves, which are composed of eight or ten Pair of Lobes, broader and blunter at their Ends than those of the common Sort; the Flowers are larger, and the Spikes longer; the Seed Pods are also much thicker than those of the common Sort, but in other Respects are very like it.

These Plants are propagated by Seeds, which may be sown either in Spring or Autumn, upon a Bed in an open Situation; and when the Plants come up, they must be kept clean from Weeds till they are strong enough to remove, then a Spot of Ground should be prepared, in Size proportionable to the Quantity of Plants designed; this should be well dug, and cleared from the Roots of all noxious Weeds; then the Plants

should be carefully taken up and planted in Rows at a Foot and a Half Distance, and in the Rows one Foot asunder, observing to water them till they have taken new Root; after which they will require no farther Care but to keep them clean from Weeds, which may be easily done by hoeing the Ground frequently between the Plants, and in Spring the Ground between the Rows should be dug, which will encourage their Roots, and cause them to shoot out vigorous Stalks; and if their Stalks are cut down before the Seeds are formed every Year, the Roots will continue the longer, especially if they grow on a light dry Soil. The Seeds of these will grow where-ever they are permitted to scatter, so that Plenty of the Plants will come up without any Care, and these may be transplanted and managed in the same Manner as is before directed.

The 1st Sort is used in Medicine; it is accounted cordial, sudorifick, and alexipharmick, so very good against pestilential Distempers, expelling the Venom through the Pores of the Skin, and is of Use in all Kinds of Fevers. Mr. Boyle, in his Treatise of the *Wholesomeness and Unwholesomeness of the Air*, bestows three or four Pages, in celebrating the Virtues of Goat's-rue in pestilential and malignant Diseases, from his own Observation and Experience.

The 3d Sort was discovered by the late Dr. Housloun, at Campeachy, from whence he sent the Seeds into Europe. This Plant is propagated by Seeds, which must be sown on a hot Bed early in the Spring; and when the Plants came up, and are fit to transplant, they must be transplanted each into a small Pot, and plunged into a hot Bed of Tanners Bark, shading them from the Sun till they have taken new Root; then they must be treated as hath been directed for other tender Plants, which are kept in the Bark Stove. With this Management they will flower in July, and in September they will perfect their Seeds, but the Plants may be preserved through the Winter in the Bark Stove.

GALENIA. Lin. Gen. Plant. 443. *Sberardia*. Ponted. Epist. 14.

The Title of this Genus was given to it by Dr. Linnaeus, from the famous Physician Galen.

The Characters are,

The Flower hath a small quadrisid Empalement of one Leaf; it hath no Petals, but hath eight hairy Stamina the Length of the Empalement, terminated by double Summits. In the Center is situated a roundish Germen, supporting two reflexed Styles, crowned by simple Stigmas. The Empalement afterward becomes a roundish Capsule with two Cells, containing two oblong angular Seeds.

We know but one Species of this Genus, viz.

GALENIA. Hort. Cliff. 150. Shrubby *Galenia*. This is the *Sberardia*. Ponted. and the *Artiplex Africana, lignosa, frutescens, rosmarini foliis*. Hort. Pis. 20. Shrubby African woody *Atriplex*, with Rosemary Leaves.

This grows naturally at the Cape of Good Hope, and in other Parts of Africa; it rises with a shrubby Stalk about 4 Feet high, sending out many weak Branches garnished with very narrow Leaves, placed irregularly on every Side the Branches; they are of a light green, with a Furrow running longitudinally through the Middle; the Flowers are produced in loose Panicles, from the Side and at the End of the Branches; they are very small,

small, and have no Petals, so make no great Appearance. The Flowers come out in *July* and *August*, but are not succeeded by Seeds in *England*.

This Plant will not live through the Winter in the open Air in *England*, so must be placed in the Greenhouse with other hardy exotics, where it may have a large Share of Air in mild Weather, for it only requires protection from Frost. In Summer it may be exposed in the open Air, with other Plants of the same Country; in dry Weather it must be frequently watered. This may be propagated by Cuttings, which, if planted during any of the Summer Months, and watered frequently, will take Root in about five or six Weeks, and may then be treated as the old Plants.

GALEOPSIS. *Lin. Gen. Plant.* 637. *Tourn. Inst. R. H.* 185. *Tab.* 86. Stinking Dead Nettle.

The Characters are,

The Empalement of the Flower is tubulous, of one Leaf, cut into five Parts, which end in acute Points. The Flower is of the Lip Kind, having a short Tube; the Chaps are a little broader, and the Length of the Empalement; from the Base to the under Lip, it is on both Sides sharply indented; the upper Lip is concave, roundish, and sawed at the Top; the under Lip is trifid, the Middle Segment being the largest, which is crenated. It hath four Stamina inclosed in the upper Lip, two being shorter than the other; they are terminated by roundish bifid Summits. In the Center is situated a quadrifid Germen, supporting a slender Style, crowned by a bifid acute Stigma. The Germen afterward becomes four naked Seeds, sitting in the rigid Empalement.

The Species are,

1. GALEOPSIS internodiis caulinis aequalibus, verticillis omnibus remotis. *Lin. Sp. Plant.* 579. Stinking Hedge Nettle, with equal Distances between the Joints, and Whorls growing at a great Distance. This is the *Sideritis arvensis angustifolia rubra*. *C. B. P.* 233. Red narrow leaved Field Ironwort.

2. GALEOPSIS internodiis supernè incrassatis, verticillis summis subcontiguis. *Lin. Sp. Plant.* 579. Stinking Hedge Nettle, whose Joints are thicker above, and the Whorls at the Top growing near each other. This is the *Lamium cannabinum folio vulgare*. *Raii Syn. Ed.* 3. p. 240. Common Dead Nettle with a Hemp Leaf.

3. GALEOPSIS corollâ flavâ, labio inferiore maculato. *Flor. Lapp.* 193. Stinking Hedge Nettle with a yellow Flower, whose under Lip is spotted. This is the *Lamium cannabinum aculeatum flore luteo specioso, labiis purpureis*. *Pluk. Alm.* 204. Prickly Hemp Dead Nettle with a beautiful yellow Flower and purple Lips.

4. GALEOPSIS verticillis sexfloris, involucri tetraphyllo. *Lin. Sp. Plant.* 780. Stinking Hedge Nettle with six Flowers in each Whorl, and a four leaved Involucrium. This is the *Galeopsis frœ urtica iners flore luteo*. *F. B.* 3. 323. Stinking, or Dead Nettle with a yellow Flower.

5. GALEOPSIS verticillis bifloris, foliis oblongo-cordatis. Stinking Hedge Nettle, with two Flowers in each Whorl, and oblong Heart-shaped Leaves. This is the *Galeopsis Orientalis ocimastri folio, flore majore flavescente*. *H. R. Par.* Eastern stinking Hedge Nettle, with an Ocimastrium Leaf, and a larger yellowish Flower.

6. GALEOPSIS caule piloso, calycibus labio corollæ su-

periore longioribus. *Lin. Sp. Plant.* 580. Stinking Hedge Nettle with a hairy Stalk, and the Empalement longer than the upper Lip of the Petal. This is the *Galeopsis annua Hispanica, rotundiore folio*. *Inst. R. H.* Annual Spanish stinking Hedge Nettle, with a rounder Leaf.

These are all of them annual Plants, except the fourth and fifth Sorts; the three first grow naturally in *England*. The first is found upon arable Land in many Places; the second grows upon Dunghills, and by the Side of Paths, in most Parts of *England*. The third Sort grows chiefly in the Northern Countries, but I have found it growing wild in *Essex*, within ten Miles of *London*. These Plants are seldom cultivated in Gardens, for if their Seeds are permitted to scatter, the Plants will come up as Weeds where-ever they are allowed a Place.

The fourth is a perennial Plant with a creeping Root; this grows in the Woods and under Hedges in most Parts of *England*. The fifth grows in the *Levant*; this is a biennial Plant, which perishes soon after the Seeds are ripe. It is preserved in Botanick Gardens for the Sake of Variety, but hath no great Beauty.

GALEOPSIS FRUTESCENS. See *Praefium*.

GALIUM. *Lin. Gen. Pl.* 117. *Tourn. Inst.* Ladies Bedstraw, or Cheese-rennet; in *French*, *Caillelait*.

The Characters are,

The Flower hath a small Empalement indented in 4 Parts, sitting upon the Germen. It hath one Petal, divided into 4 Parts almost to the Bottom; and 4 Awl-shaped Stamina shorter than the Petal and terminated by single Summits. It hath a twin Germen situated under the Flower, supporting a slender half bifid Style, crowned by a globular Stigma. The Germen afterward becomes two dry Berries, joined together, each inclosing a large Kidney-shaped Seed.

The Species are,

1. GALIUM foliis octonis linearibus sulcatis, ramis floriferis brevibus. *Hort. Cliff.* 34. Ladies Bedstraw with eight narrow furrowed Leaves, and short flowering Branches. This is the *Galium luteum*. *C. B. P.* 335. Yellow Ladies Bedstraw.

2. GALIUM foliis octonis ovatis linearibus subserratis patentissimis mucronatis, caule flaccido, ramis patentibus. *Lin. Sp. Plant.* 107. Ladies Bedstraw with eight oval narrow Leaves, which are spread open, sawed, and pointed, a weak Stalk, and spreading Branches. This is the *Mollugo montana latifolia ramosa*. *C. B. P.* 333. Branching broad leaved Mountain Mollugo.

3. GALIUM foliis verticillatis linearis-setaceis, pedunculis folio longioribus. *Hort. Cliff.* 34. Ladies Bedstraw, with narrow bristly Leaves growing in Whorls, and Foot Stalks of the Flowers longer than the Leaves. This is the *Galium nigra-purpureum montanum tenuifolium*. *Col. Ecpbr.* 1. p. 298. *C. B. P.* 335. Narrow leaved Mountain Ladies Bedstraw, with a black purple Flower.

4. GALIUM foliis verticillatis linearibus, pedunculis dichotomis, summo caule floriferis. *Prod. Leyd.* 256. Ladies Bedstraw with narrow Leaves growing in Whorls, Foot Stalks divided by Pairs, and Flowers growing at the Top of the Stalk. *Galium saxatile glauco folio*. *Bocc. Mus.* Rock Ladies Bedstraw with a gray Leaf.

5. GALIUM foliis verticillatis linearibus, pedunculis brevissimis. *Hort. Cliff.* 34. Ladies Bedstraw with narrow Leaves growing in Whorls, and short Foot Stalks.

This

This is the *Galium rubrum*. C. B. P. 335. Red Ladies Bedstraw.

6. *GALIUM foliis quaternis lanceolatis trinerviis glabris, caule erecto, seminibus bispidis.* Flor. Lapp. 60. Ladies Bedstraw, with four smooth Spear-shaped Leaves having three Veins, an upright Stalk, and rough Seeds. This is the *Rubia pratensis laevis acuto folio*. C. B. P. 333. Smooth Meadow Madder with an acute Reaf.

7. *GALIUM foliis verticillatis, lineari-lanceolatis, ramis floriferis longioribus.* Ladies Bedstraw with narrow Spear-shaped Leaves growing in Whorls, and longer Branches of Flowers. This is the *Galium album vulgare*. Tour. Inst. Common white Ladies Bedstraw.

8. *GALIUM foliis septimis lineari-lanceolatis glabris, caule erecto ramosissimo.* Ladies Bedstraw with seven narrow smooth Spear-shaped Leaves, and an upright branching Stalk. This is the *Galium album linifolium*. Barrel. Obser. 99. White Ladies Bedstraw with a Flax Leaf.

9. *GALIUM foliis quaternis obovatis inaequalibus, caulis diffusis.* Flor. Suec. 119. Ladies Bedstraw with four unequal oval Leaves, and a diffused Stalk. *Galium palustre album*. C. B. P. White Marsh Ladies Bedstraw.

The first of these Plants (which is the Sort commonly used in Medicine) is very common in moist Meadows, and Pasture Grounds in England. The other Varieties are preserved in curious Botanic Gardens, but as they are Plants of very little Beauty, and are subject to spread very far, and over-run whatever Plants grow near them, they are seldom cultivated in other Gardens.

These Sorts may any of them be propagated by parting their Roots, which spread and increase very fast, either in the Spring or Autumn, and will grow almost in any Soil or Situation, especially the first Sort; the other Sorts require a drier Soil, but will all grow in any Situation.

GARCINIA. Lin. G. Pl. 526. The Mangosteen.

The Characters are,

The Flower hath a three leaved Empalement, which is permanent. It hath 4 roundish Petals, which spread open, and are larger than the Empalement. It hath 16 Stamina, which are erect, and form a Cylinder, terminated by roundish Summits. In the Center is situated an oval Germen, with scarce any Style, but is crowned by a Buckler-shaped plain Stigma divided into 8 Parts, and is permanent. The Germen becomes a thick globular Berry with one Cell, including 8 bairy fleshy Seeds, which are convex and angular.

We have but one Species of this Genus, viz.

GARCINIA. Hort. Cliff. 182. The Mangostan, or Mangosteen. This is the *Arbor peregrina aurantio simili fructu*. Clus. Exot. 12. Foreign Tree with a Fruit like the Orange.

This Tree grows naturally in the Molucca Islands, and also in the Inland Parts of New Spain, from whence I received perfect Specimens, which were sent me by Mr. Robert Millar, who gathered them near Tolu, but did not know the Tree. It rises with an upright Stem near 20 Feet high, sending out many Branches on every Side, which are placed opposite by Pairs, and stand oblique to each other, and not at right Angles: the Bark of the Branches is smooth, of a gray Colour, but on the tender Shoots it is green, and that of the Trunk is of a darker Colour and full of Cracks: The Leaves are of the Spear-

shape, and are entire; they are 7 or 8 Inches long, and about half so much Breadth in the Middle, gradually diminishing to both Ends; they are of a lucid green on their upper Side, and of an Olive Colour on their under, having a prominent Mid-rib, with several small Veins running from that to both Sides of the Leaf. The Flower is like that of a single Rose, composed of 4 roundish Petals which are thick at their Base, but thinner toward their Ends; they are of a dark red Colour. The Fruit which succeeds the Flower is round, the Size of a middling Orange; the Top is covered by a Cap, which was the Stigma on the Top of the Style, and remains to the Top of the Fruit, and is indented in Rays to the Number of six or seven, which are obtuse. The Shell of the Fruit is like that of the Pomegranate, but softer, thicker, and fuller of Juice; it is green at first, but changes to a dark Brown with some yellowish Spots; the Inside of the Fruit is of a Rose Colour, and divided into several Parts by thin Partitions, as in Oranges, in which the Seeds are lodged, surrounded by a soft juicy Pulp of a delicious Flavour, partaking of the Strawberry and the Grape, and is esteemed one of the richest Fruits in the World; and the Trees naturally growing in the Form of Pyramolas, whose Branches are well garnished with large shining green Leaves: They have an elegant Appearance, and afford a kindly Shade in hot Countries, therefore are worthy of Cultivation, in all those Countries where there is Warmth enough to ripen the Fruit.

As there are but few of the Seeds in these Fruit which come to Perfection (for the greatest Part of them are abortive) so most of those which have been brought to Europe have failed; therefore the surest Way to obtain the Plants, is to sow their Seeds in Tubs of Earth in the Country, and when the Plants have obtained Strength, they may be brought to Europe; but there should be great Care taken in their Passage, to screen them from Salt Water and the Spray of the Sea, as also not to give them much Water, especially when they are in a cool or temperate Climate, for these Plants are very impatient of Wet. When the Plants arrive in Europe, they should be carefully transplanted, each into a separate Pot, filled with light Kitchen Garden Earth, and plunged into the Tan Bed, observing to shade them from the Sun till they have taken new Root; then they must be treated in the same Manner as other tender Plants from hot Countries.

GARDENS are distinguished into Flower Gardens, Fruit Gardens, and Kitchen Gardens. The first, being designed for Pleasure and Ornament, are to be placed in the most conspicuous Parts, i. e. next to, or just against, the back Front of the House; the two latter being principally intended for Use and Service, are placed less in Sight.

Though the Fruit and Kitchen Gardens are here mentioned as two distinct Gardens, and have by the French Gardeners, as also by some of our own Countrymen been contrived as such, yet they are now usually in one; and with good Reason, since they both require a good Soil and Exposure, and will equally require to be placed out of the View of the House. And as it will be proper to inclose the Kitchen Garden with Walls, and to secure the Gates, that no Persons may have

have Access to it, who have no Business in it, for the Sake of preserving the Product, so these Walls will answer the Purposes of both. Moreover, in the Disposition of the Kitchen Garden, when it is properly divided into Quarters, the planting of Espaliers of Fruit Trees round each of the Quarters, will be of Use in screening from the View the Kitchen Herbs growing in the Quarters; and by that Means, give an Elegancy to both Parts, and save besides a great Expence. The only Objection which has been made to this of any Consequence, is, that the Gardeners are too apt to crowd the Borders near the Walls with Kitchen Herbs, whereby the Trees are deprived of their Nourishment; but this is in every Gentleman's Power to redress, by not suffering the Borders to be crowded. I shall treat more fully of this under the Article of *Kitchen Garden*.

In the Choice of a Place to plant a Garden in, the Situation and Exposure of the Ground are the most essential Points to be regarded; since, if a Failure be made in that Point, all the Care and Expence will in a Manner be lost.

In a Garden for Pleasure, the principal Things to be considered, are, 1st, The Situation; 2dly, The Soil, Aspect, or Exposure; 3dly, Water; 4thly, Prospect.

1st, Situation: This ought to be such an one as is wholesome, in a Place that is neither too high nor too low; for if a Garden be too high, it will be exposed to the Winds, which are very prejudicial to Trees; if it be too low, the Dampness and the Vermin, and venomous Creatures that breed in Ponds and marshy Places, add much to their Insalubrity.

A Situation on a rising Ground, or on the Side of a Hill, is most happy, especially if the Ground be not too steep; if the Slope be easy, and in a Manner imperceptible; if a good deal of Level may be had near the House; and if it abounds with Springs of Water; for, being sheltered from the Fury of the Winds, and the violent Heat of the Sun, a temperate Air will be there enjoyed; and the Water that descends from the Top of the Hills, either from Springs or Rain, will not only supply Fountains, Canals, and Cascades, for Ornament, but when it has performed its Office, will water the adjacent Valleys, and render them fertile and wholesome, if it be not suffered to stagnate in them.

Indeed, if the Declivity of the Hill be too steep, and the Water too abundant, a Garden on the Side of it may often suffer, by having the Trees torn up by Torrents and Floods; and the Earth above tumbling down, the Walls may be demolished, and the Walks spoiled.

It cannot, however, be denied, that the Situation on a Plain or Flat, has several Advantages that the higher Situation has not: Floods and Rains make no Spoil; there is a continued Prospect of Champaigns, intersected by Rivers, Ponds, Brooks, Meadows, and Hills covered with Buildings or Woods; and the level Surface is less tiresome to walk on, and less chargeable, than that on the Side of a Hill; the Terrace Walks and Steps are not necessary; but the greatest Disadvantage of flat Gardens is the Want of an extensive Prospect, which rising Grounds afford.

2dly, The second Thing to be considered in choosing a Plat for a Garden, is a good Earth or Soil.

It is scarce possible to make a fine Garden in a bad Soil: there are indeed Ways to meliorate Ground, but they are very expensive; and sometimes when the Expence has been bestowed of laying good Earth three Feet deep over the whole Surface, a whole Garden has been ruined, notwithstanding the Exposure has been southerly and healthful, when the Roots of the Trees have come to reach the natural Bottom.

To judge of the Quality of the Soil, observe whether there be any Heath, Thistles, or such like Weeds, growing spontaneously in it, for they are certain Signs that the Ground is poor. Likewise, if there be large Trees growing thereabouts, observe whether they grow crooked, ill shaped, and grubby, and of a faded green, and full of Moss, or infested with Vermin; if so, the Place is to be rejected: But, on the contrary, if it be covered with good Grass fit for Pasture, then you may be encouraged to try the Depth of the Soil.

To know this, dig Holes in several Places six Feet wide and four Feet deep; if you find three Feet of good Earth it will do well, but less than two will not be sufficient.

The Quality of good Ground is neither to be stony, nor too hard to work; neither too dry nor too moist; nor too sandy and light, or too strong and clayey, which is the worst of all for Gardens.

3dly, The third Requisite is Water. The Want of this is one of the greatest Inconveniences that can attend a Garden, and will bring a certain Mortality upon whatever is planted in it, especially in the greater Droughts that often happen in a dry Situation in Summer; besides the Usefulness of it in fine Gardens, for making *Fets d'Eau*, Canals, Cascades, &c. which are the greatest Ornaments of a Garden.

4thly, The fourth Thing required in a good Situation is, the View and Prospect of a fine Country; and though this is not so absolutely necessary as Water, yet it is one of the most agreeable Beauties of a fine Garden: Besides, if a Garden be planted in a low Place that is buried, as I may say, and has no Kind of Prospect, it will be not only disagreeable but unwholesome, by being too much shaded and obscured; as the Trees will rather retain insalubrious Damps, than communicate the refreshing Air, so purifying to vegetable Nature.

In short, a Garden necessarily requires (besides the Care of the Gardener) the Sun, a good Soil, a full, or at least an open Prospect, and Water, the last above all; and it would be egregious Folly to plant a Garden, where any of these are wanting.

Of the Designing or Manner of Laying out a Pleasure Garden.

The Area of a handsome Garden may take up thirty or forty Acres, not more.

And as for the Disposition and Distribution of this Garden, the following Directions may be observed.

1st, There ought always to be a Descent from the House to the Garden not fewer than three Steps, but if there are six or seven it will be better. This Elevation of the Building will make it more dry and wholesome, also from the Head of these Steps there will be a farther Prospect or View of the Garden.

In a fine Garden, the first Thing that should present itself

itself to the Sight, should be an open Lawn of Grass, which, in Size, should be proportionable to the Garden; in a large Garden, it should not be less than six or eight Acres; but in middling or small Gardens, the Width of it should be considerably more than the Front of the House; and if the Depth be one Half more than the Width, it will have a better Effect. The Figure of this Lawn need not be regular, and if on the Sides there are Trees planted irregularly, by Way of open Grove, some of which may be planted forwarder upon the Lawn than the others, whereby the Regularity of the Lawn will be broken, it will render it more like Nature, the Beauties of which should always be studied in the laying out and planting of Gardens; for the nearer these Gardens approach to Nature, the longer they will please; for what is a Garden, but a natural Spot of Ground dressed and properly ornamented? There are those who have erred in copying what they call Nature, as much as those who have drawn a whole Garden into strait Lines, great Alleys, Stars, &c. by bringing the roughest and most deformed Part of Nature, into their Compositions of Gardens: As for Instance, where the Ground has been naturally level, they have, at great Expence, made Hollows and raised Mole Hills; so that the Turf has been rendered not only more unpleasant to walk upon, but much worse to keep: And after all the Pains that have been taken to ape Nature, the whole is as easily discovered to be the Work of Art, as the stiffest Slopes and the most finished Parterres.

The great Art in laying out Gardens, is to adapt the several Parts to the natural Position of the Ground, so as to have as little Earth to remove as possible; for this is often one of the greatest Expences in making Gardens; and it may with Truth be affirmed, that where-ever this has been practised, nine Times in ten it has proved for the worse; so that if instead of leveling Hills to form large Terraces, stiff Slopes, and even Parterres, as has been too often practised; or the sinking of Hollows, and raising Hills, as hath by others been done; if the Surface of the Ground had only been smoothed and well turfed, it would have had a much better Effect, and been more generally approved than the greatest Number of these Gardens, which have been made with an infinite Expence both of Time and Money.

The next Thing to be observed is, to contrive a dry Walk, which should lead quite round the whole Garden; for as Gardens are designed to promote the Exercise of Walking, the greater the Extent of this dry Walk, the better it will answer the Intent; since in bad Weather, or in dewy Mornings and Evenings, when the Fields are unpleasant or unsafe to walk over, these dry Walks in Gardens become useful and pleasant; and such Walks, if laid either with Gravel or Sand, may lead through the different Plantations, gently winding about in an easy natural Way, which will be more agreeable than those long strait Walks, which are too frequently seen in Gardens.

But as the Taste of designing Gardens has of late altered from the former Method, there are many Persons who have gone into the opposite Extreme; and in the forming of what they term *Serpentine Walks*, have twist-

ed them about in so many short Turns, as to render it very disagreeable to walk on them; and at the same Time they strike the Sight with as much Stiffness and Appearance of Art, as any of the Methods formerly practised. In short, the fewer Turns there are in these Walks, and the more they are concealed, the better they will please; and yet the Turns being easy, and at great Distances, will take off all the Appearance of Straitness. And here let me observe, that there can be no better, or more easy or natural Method of laying out these Walks, than by tracing the easy Turns made on a Road, where it bends by the Track of the Coach Wheels.

These Walks should be so contrived, as to lead into Shade as soon as possible; as also into some Plantations of Shrubs, where Persons may walk in private, and be sheltered from the Wind; for no Garden can be pleasing, where there is Want of Shade and Shelter.

Another Thing absolutely necessary is, where the Boundaries of the Garden are fenced with Walls or Pales, they should be hid by Plantations of flowering Shrubs, intermixed with Laurels, and some other Evergreens, which will have a good Effect, and at the same Time conceal the Fences, which are disagreeable, when left naked and exposed to the Sight.

In Situations where there is a good Supply of Water, the Designer has Room for adding one of the greatest Beauties to the Garden, especially if it will admit of a constant Stream; for in such Places, if the Water is properly conducted through the Garden, it will afford infinite Pleasure; for although these Streams may not be sufficient to supply a large Surface, yet if these narrow Rivulets are judiciously led about the Garden, they will have a better Effect than many of the large stagnating Ponds or Canals, so frequently made in large Gardens; for where these Pieces of Water are large, if all the Boundaries can be seen from one Point of View, they cannot be esteemed by Persons of Judgment; and frequently these standing Waters are brought so near the House, as to render the Air damp and unhealthy; and many Times they are so situated, as to occasion this Inconvenience, and at the same Time are not seen to any Advantage from the House.

Where Wildernesses are intended, these should not be cut into Stars or other ridiculous Figures, nor formed into Mazes or Labyrinths, which in a great Design is trifling, but the Walks should be noble, and shaded by tall Trees; and the Spaces of the Quarters planted with flowering Shrubs and Evergreens, whereby they will be rendered pleasant at all Seasons of the Year; and if there are hardy Sorts of Flowers (which will thrive with little Care) scattered about near the Sides of the Walks, they will have a very good Effect, in making a Variety of natural Beauties almost through the Year.

The Situation of these Wildernesses should not be too near the House, lest they should occasion Damps; therefore it is much better to contrive some open Groves, through which there may be a Communication under Shade, from the House to these Wildernesses; which are much the best when they are planted at the farthest Part of the Garden, provided they do not obstruct the View of fine Objects.

Buildings are also very great Ornaments to a Garden.

if they are well designed and properly placed; but the modern Taste of crowding Gardens with large useless Buildings, I presume to think is censurable, with Regard as well to Propriety as Expence.

Statues and Vases are also very beautiful Objects, but these should by no means be placed too near each other; for when several of them appear at once, they fill and confound the Eye, and lose the beautiful Effect which they would have, if now and then one properly situated, engages the Sight.

What an Expence might be spared and applied to nobler Purposes, if Nature only were to be cultivated, if Simplicity were studied in this delightful Art, rather than Ostentation! For any Thing may be said to be more of Nature, than what we miscall Grandeur.

Fountains are also very ornamental to a Garden, if they are magnificently built, and where a constant Supply of Water can be obtained; but if they are meanly erected, or have not Water to keep them constantly running, they should never be introduced into Gardens, for nothing can be more ridiculous than to see a dry Fountain; which, perhaps, at a great Expence, may have Water forced up, to supply it for an Hour or two, and no more; and this, perhaps, not in dry Seasons, when there is a general Scarcity of Water.

The same may also be observed of Cascades, and other Falls of Water, which ought never to be contrived in Gardens, where there cannot be a constant Run of Water; but where the Situation of a Garden is so happy, as to be naturally supplied with Water, these Falls and *Jets d'Eau*, may be rendered very great Beauties, especially if they are well designed, and not made in the low mean Taste, in which too many of those now in being appear, where the Water is made to fall over a Parcel of regular Steps of Stone; but the Fall should be in one Sheet from Top to Bottom, where should be placed many large rough Stones to break and disperse the Water, and to increase the Noise of the Fall.

Where the Ground is naturally uneven, and has gentle Rises and Falls, these may be so humoured in laying out the Ground, as to be rendered very great Beauties; but these Inequalities of the Ground must by no Means be cut into regular stiff Slopes, nor Amphitheatres, as has been too much the Practice: But if the Knolls are properly planted with Clumps of Trees or Shrubs, and the sloping Sides smoothed and left in their natural Position, they will have a much better Effect, than can be given them by all the regular Angles, Lines, and flat Slopes, which have been till of late, introduced by all the Designers of Gardens.

The Taste in laying out Gardens has greatly altered, and has been as greatly improved in *England*, in the Compaſs of a few Years; for, with the Revolution, the *Dutch* Taste of laying out Gardens was introduced, which consisted of little more than Flower Borders laid out in several Scrolls of Box Work, clipped Ever-greens, and such low expensive Things; as also the Walling round, and dividing the several Parts of Gardens by cross Walls; so that a Garden consisting of eight or ten Acres, was generally divided by Brick Walls, into three or four separate Gardens; and these were reduced to exact Levels, having many Gravel Walks, and the Borders on each Side crowded with clipped Trees and ever-green

Hedges, dividing these small Inclosures again; so that the first making and planting of these small Gardens was attended with a greater Expence, as was the keeping of them afterward, than Gardens of six Times the Extent, when designed after Nature.

Whether this Taste so universally prevailed in *England*, in Complaisance to his Majesty King *William*, or was owing to the low grovelling Taste of those Persons, who had the designing of most of the *English* Gardens, it is difficult to determine; but it is very certain, that the Gentlemen, at that Time, attended very little themselves to the Disposition of their Gardens, but were contented to leave the whole Direction of them to Persons of the meanest Talents that ever professed the Art; so that soon after, when another Taste prevailed, these Gardens were almost totally demolished, and it would have been well, if a good, that is to say, a natural Taste had succeeded to the other; but this was not the Case, for though a more open and extensive Way of laying out Gardens was introduced, yet this was little more than copying after the *French*, whose Taste was in making long Avenues, strait Walks, stiff regular Slopes, Cabinets, Fret Work, tall Hedges cut into various Shapes, *Jets d'Eau*, Fountains, &c. so that there was little of Nature studied; but, on the contrary, all the geometrical Figures introduced in Wilderness Work, as also in the Parterres, and other Compartments of the Garden; nor is it so much to be wondered at, that this Taste prevailed in *France*, when the Designs of all the principal Gardens there were formed by Architects, who were as studious to have the Symmetry of the opposite, or corresponding Part of the Garden, as exact as the Apartments of a Habitation; nor has Length of Time, nor the Improvements already made in other Countries, amended their Taste, or convinced them of its Absurdity.

As the Gardens of *Versailles*, *Marli*, and others, were extolled for their Magnificence, so the Plans of them were almost universally copied; the Designers or Imitators rather, only varying the Parts according to the Situation or Figure of the Ground; and this was practised for several Years, at a Time; when great Sums of Money were expended in Gardens, which might have rendered this Country the most beautiful of any in *Europe*, had a natural Taste then prevailed in the designing of Gardens, which is the more to be lamented, as the Plantations then made, have been many of them rooted out, to make Way for the Alterations and Improvements which have been since introduced.

Many Persons, I am sensible, will have it, that, in the Designs of Gardens, the Taste should alter from Time to Time as much as the Fashion of Apparel; but these cannot be Persons of Judgment, for wherever there are natural Beauties in a Country, they will always please Persons of real Knowledge; and frequently it is observed, that Persons of but little Skill in the Art of Gardening, are struck with these Beauties without knowing the Cause; therefore where the beautiful Parts of Nature are justly imitated in Gardens, they will always be approved by judicious Persons, let the Taste of Gardening alter as it will.

When Trees have been long growing in a Garden, nothing can be more disagreeable than to have them destroyed,

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stroyed, to alter the Garden according to the Fashion of the Time, because it requires much Time to bring up Trees to such Height as to afford Shade and Shelter; and, as Time is precious, so, where the Disposition of the Garden is altered, there should be great Attention given to the Preservation of all the good Trees, wherever they can be either useful or ornamental.

There is another essential Part of Gardening, which cannot be too much considered by Persons who design Gardens, which is that of adapting the several Sorts of Trees and Shrubs to the Situation and Soil of the Garden, as also to allow the Trees a proper Share of Room; but, however necessary this will appear, yet very few Persons have made this their Study, inasmuch that when one views many modern Gardens, and sees the great Number of Trees and Shrubs, which are crowded into them, one would be induced to believe, that private Interest has had a greater Influence, than any other Motive, with the Designers. Indeed this Fault may often be ascribed to the Master, who, perhaps, is too much in Haste for Shade and Shelter; so will have three or four Times the Number of Trees and Shrubs planted as should have been, or that can remain long without Injury, where the Plantations succeed; and to this over Haste are owing the miserable Plantations of large Trees, so often seen in Gardens and Parks, where Trees of all Sorts, and of any Age, are taken out of Woods, Hedge Rows, &c. and removed at a great Expence to stand and decay annually, till they become so many dead Sticks, than which nothing can be a more disagreeable Sight to the Owner, who, after an Expectation for several Years, attended with an Expence of Watering, Digging, and Cleaning, finds himself under a Necessity either of replanting, or giving up the Thoughts of having any. Numbers of Persons have indeed amused themselves with the Hopes of Success, by seeing these new planted Trees put out Branches for a Year or two which they generally do; but in three or four Years after, instead of making a Progress, they begin to decay at the Top, and continue so to do gradually, until they quite perish, which, perhaps, may not happen in eight or ten Years, especially if no severe Winter, or very dry Summer, intervenes, either of which generally proves fatal to these Plantations; so that Persons may be led on with Hopes, for so many Years, in the best Part of their Lives, when there is a Certainty of their failing, or at least of their never increasing in Size; but of this I shall treat more fully under the Article of *Planting*, and shall proceed.

In the Business of Designs, a mean and pitiful Manner should be studiously avoided, and the Aim should be always at that which is noble and great, not to bring too many little Things into a Garden, nor to make small Pieces of Water, narrow Walks, &c. especially in large Gardens, for it is much better to have a few great Things, than four Times the Number of small ones, which are trifling. In small Gardens there is more Excuse for this, nor indeed, would it be right, to have either large Lawns, broad Walks, or large Pieces of Water in such; but yet even in these there ought to be a Medium, and Persons should never attempt to crowd too many Things into these, whereby the Whole will appear only as a mean and trifling Model of a large Garden.

Before the Design of a Garden is entered upon, it ought to be considered, what it will be in twenty or thirty Years Time, when the Trees and Shrubs are grown up, and spread; for it often happens, that a Design, which looks handsome when it is first planted, and in good Proportion, in Process of Time becomes so small and ridiculous, that there is a Necessity either of altering, or totally destroying it.

The general Distribution of a Garden, and of its Parts, ought to be accommodated to the different Situations of the Ground, for a Design may be very proper for a Garden on a perfect Level, which will by no Means do for one where there are great Inequalities in the Ground; so that as I have before intimated, the great Art of Designing is, in properly adapting the Design to the Situation, and contriving to save the Expence of removing Earth, to humour the Inequalities of the Ground, to proportion the Number and Sorts of Trees and Shrubs to each Part of the Garden, and to shut out, from the View of the Gardens, no Objects that may become ornamental.

There are, besides these, many other Rules relating to the Proportions, Conformity, and Disposition of the different Parts and Ornaments of Gardens, of which more may be seen under their several Articles.

GARIDELLA. Tourn. Inst. R. H. 655. Tab. 430. Lin. Gen. Plant. 507. [So named in Honour of Dr. Garidel, Professor of Physick, at Aix, in Provence.]

The Characters are,

The Flower hath a small oblong erect Empalement of five Leaves, it hath no Petals, but five oblong equal Nectariums occupy their Place; these are bilabiate. The outer Part of the under Lip is bifid and plain; the interior Part of the upper Lip is short and single. The Flower hath eight or ten Awl-shaped Stamina, which are shorter than the Empalement, and are terminated by obtuse erect Summits. In the Center is situated three Germina, which are oblong, compressed, and sharp pointed, having no Styles, but crowned by simple Stigmas; these become three oblong compressed Capsules with two Valves, inclosing several small Seeds.

We know but one Species of this Genus, viz.

GARIDELLA. Hort. Cliff. 170. This is the Garidella foliis tenuissimis divisis. Tourn. Garidella with very narrow divided Leaves, and the Nigella Cretica folio Fœniculi. C. B. P. 146. Fennel Flower of Crete with a Fennel Leaf.

This Plant is very near akin to the *Nigella*, or Fennel Flower; it grows wild in *Candia*, and on Mount *Baldur*, in *Italy*, also in *Provence*, where it was discovered by Dr. *Garidel*, who sent the Seeds to Dr. *Tournefort*, for the Royal Garden at *Paris*.

This is an annual Plant, which rises with an upright Stalk, dividing into several slender Branches, which are garnished at their Joints with very slender Leaves like those of Fennel. The Stalks are terminated by one small Flower of a whitish Colour, which is succeeded by 3 Capsules, each containing 2 or 3 small Seeds. It flowers in *June* and *July*, and the Seeds ripen in *September*. It is propagated by Seeds, which should be sown in Autumn, on a Bed, or Border of light fresh Earth, where the Plants are designed to remain (for they seldom thrive, if transplanted); when the Plants are come

up, they must be carefully cleared from Weeds, and where they are too close, they must be thinned, leaving them about four or five Inches apart; as they grow up, they must constantly be kept clear from Weeds, which, if suffered to grow amongst the Plants, will soon overbear and destroy them; this is all the Culture they require, and if the Seeds are permitted to scatter, the Plants will come up without any farther Care.

GENERATION is, by Naturalists, defined to be the Act of procreating and producing a Thing which before was not; or, according to the Schoolmen, it is the total Change or Conversion of a Body into a new one, which retains no sensible Part or Mark of its former State.

Generation is more immediately understood of Animal and Vegetable Bodies from Seed, or the Coition of others of different Sexes, but of the same Genus or Kind.

The Generation of Plants bears a close Analogy to that of some Animals, especially such as want local Motion, as Mussels, and other immoveable Shell Fish, which are Hermaphrodite, and contain both the male and female Organs of Generation.

The Flower of a Plant is found to be the *Pudendum*, or principal Organ of Generation; but the Use of so much Mechanism, and so many Parts, has been but little known till of late Years.

The Flower of a Lily consists of six *Petala*, or Flower Leaves, from the Bottom of which, in the Middle, arises a Kind of Tube, called, by *Tournefort*, the *Pistillum*; and by *Dr. Linnaeus* the Style; this rests upon the Germen, which is the female Organ of Generation; round this are placed pretty fine Threads, called the Stamina, or Filaments; these Stamina arise likewise from the Bottom of the Flower, and terminate at the Top in little Summits, called by some *Apices*, which are replete with a fine Dust, called Farina; these are the male Organs of Plants.

This is the general Structure of the Flowers of Plants, although they are infinite Ways diversified, and to such a Degree, that some have no sensible Pistil, and others want the Stamina; others again have the Stamina, but want the Apices, and some Plants exceed all others in this, that they have no visible Flowers; but if it be allowed, that this before-mentioned is the most common Structure of Flowers, it will follow, that these Parts that seem wanting are usually only less apparent, or are situated in different Plants, or in different Parts of the same Plant.

The Fruit is usually at the Base of the Pistillum, so that, when the Pistillum falls with the rest of the Flower, the Fruit appears in the Stead of it, but oftentimes the Pistillum is the Fruit itself, but still they have both the same Situation in the Center of the Flower, and the *Petala*, or Flower Leaves, which are disposed around the little Embryo, seem to be designed only to prepare a fine Juice in the little Vessels, for the Support of it during the little Time that they last, and it requires; but some suppose the chief Use of them to be to defend the Pistillum, &c.

The Apices of the Stamina are small Capsulæ, or Bags, full of a Farina, or Dust, which falls out when the Capsula grows ripe, and bursts.

Monf. Tournefort supposed this Dust to be only an Excrement of the Food of the Fruit, and the Stamina to be nothing but excretory Ducts, which filtrated this useless Matter, and thus discharged the Embryo; but *Mr. Morland*, *Mr. Geoffroy*, and others, find nobler Uses for this Dust; on their Principle the Stamina, with the Apices and Farina, make the male Part of the Plant, and the Pistil, the female.

Mr. Morland says, It hath been long ago observed, that there is in every particular Seed a seminal Plant conveniently lodged between the two Lobes, which constitute the Bulk of the Seed, and are designed for the first Nourishment of the tender Plant.

But the admirable *Dr. Grew*, to whose generous Industry, and happy Sagacity, we are indebted for the best Improvements of this Part of Knowledge, is the only Author I can find, who hath observed that the Farina, or fine Powder, which is, at its proper Season, shed out of those *Theca*, or *Apices seminiformes* [i. e. Seed-forming Cases], which grow at the Top of the Stamina, doth some Way perform the Office of male Sperm. But herein, I think, he falls short, in that he supposes them only to drop upon the Outside, or *Uterus*, or *Vasculum feminale*, and to impregnate the included Seed by some spirituous Emanations, or energetical Impres.

That which is now subjected to the Disquisitions and Censure of such whose exquisite Skill doth constitute them Judges of such Performances, is, Whether it may not be more proper to suppose, that the Seeds which are lodged in the proper Involucra, are at the first unimpregnated Ova (or Eggs) as of Animals; that this Farina is a Congeries of seminal Plants, one of which must be conveyed into every Ovum before it can become prolific; that the Stylus, in *Mr. Ray's* Language, or the upper Part of the Pistillum, in *Mr. Tournefort's*, is a Tube designed to convey these seminal Plants into their Nests in the Ova; that there is so vast a Provision made, because of the Odds there are, whether one, of so many, shall ever find its Way into, and through so narrow a Conveyance.

To make this Supposition the more credible, I shall lay down the Observations I have made upon the Situation of these Stamina, and the Stylus, in some few Species of Plants.

First, in the *Corona Imperialis*, where the *Uterus*, or *Vasculum feminale* of the Plant stands upon the Center of the Flower; and from the Top of this ariseth the Stylus, the *Vasculum feminale* and Stylus together representing a Pistillum.

Round this are placed six Stamina; upon the Ends of each of these are Apices, so artfully fixed, that they turn every Way with the least Wind; being in Height almost equal to the Stylus about which they play, and which in this Plant is manifestly open at the Top, as it is hollow all the Way; to which we must add, that upon the Top of the Stylus there is a sort of Tuft, consisting of pinguid Villi, which I imagined to be placed there to catch and detain the Farina, as it flies out of the *Theca*; from hence, I suppose, the Wind shakes it down the Tube, till it reach the *Vasculum feminale*.

In the *Caprifolium*, or Honeysuckle, there rises a Stylus from the Rudiments of a Berry, into which it is inserted,

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serted, to the Top of the monopetalous Flower; from the Middle of which Flower are sent forth several Stamina, that shed their Farina out of the Cafes upon the Orifice of the Stylus, which, in this Plant, is villous, or tufted, upon the same Account as in the former.

In *Allium*, or common Garlick, there arises a tricoccus Uterus, or Seed Vessel; in the Center of which is inserted a short Stylus, not so high as the Apices, which thus over topping it, have the Opportunity of shedding their Globules into an Orifice more easily; for which Reason, I can discern no Tuft upon this (as in the former) to insure their Entrance, that being provided for by its Situation just under them.

The Reader, I hope, will excuse me, if I present him now with some such Reasonings or Reflections as the foregoing Account doth suggest, and will support; and I cannot but hope to persuade those that are candid, that I have assigned to the several Parts of the Flowers I have mentioned, their true and real Use.

For nothing can be more natural, than to conclude, that where a fine Powder is curiously prepared, carefully repositied and shed abroad at a peculiar Season, where there is a Tube so placed as to be fit to receive it, and such Care in disposing this Tube, where it doth not lie directly under the Cafes that shed the Powder, it hath a particular Apparatus at the End, to insure its Entrance.

Nothing can be more genuinely deduced from any Premises, than it may from this, that this Powder, or some of it, was designed to enter this Tube. If these Stamina had been only excretory Ducts, as has been hitherto supposed, to separate the grosser Parts, and leave the Juice designed for the Nourishment of the Seed more reserved, what Need was there to lodge these Excrements in such curious Repositories? they would have been conveyed any where, rather than where there was so much Danger of their dropping into the Seed Vessel again, as there is here.

Again: The Tube, over the Mouth of which they are shed, and into which they enter, leads always directly into the Seed Vessel.

To which we must add, that the Tube always begins to die when these Thecae are emptied of their Contents; if they last any longer, it is only whilst the Globules, which enter at their Orifice, may be supposed to have finished their Passage. Now, can we expect a more convincing Proof of these Tubes being designed to convey these Globules, than that they wither when there are not more Globules to convey.

If I could now shew, that the Ova, or unimpregnated Seeds, are ever to be observed without this seminal Plant, the Proof would arise to a Demonstration; but having not been so happy as to observe this, I shall content myself at present with suggesting, that hence one would conclude, that the Petala of the Flower were rather designed to sever superfluous Juices from what was left to ascend in the Stamina, than the Stamina to perform this Office, either for them, or the unimpregnated Semina, and observe the Analogy between animal and vegetable Generation, as far as was necessary there should be an Agreement between them. I shall recommend the Enquiry to those Gentlemen who are Masters of the best Microscopes, and Address in using them;

though, in the mean Time, I have made some Steps toward a Proof of this Sort, and have met with some such Hints, as make me not despair of being able, in a short Time, to give the World even this Satisfaction.

For, not to insist upon this, that the seminal Plant always lies in that Part of the Seed which is always nearest to the Insertion of this Stylus, or some Propagation of it into the Seed Vessels, I have discovered in Beans, Peas, and Phaseols, just under one End of that we call the Eye, a manifest Perforation (discernable by the grosser Sort of magnifying Glasses), which leads directly to the seminal Plant, and at which I suppose the seminal Plant did enter, and, I am apt to think, the Beans or Peas that do not thrive well, may be found destitute of it.

But I must now proceed to describe some other Plants, whereby it will appear, that there is a particular Care always exercised to convey this Powder, so often mentioned, into a Tube, which may convey it to the Ova.

Now, in leguminous Plants, if we carefully take off the Petala of the Flower, we shall discover the Pod, or Siliqua, closely covered with an involving Membrane, which, about the Top, separates into nine Stamina, each fraught with its Quantity of Farina, and these Stamina closely adhere to the Style, which is observable at the End of that Tube, which here also leads directly to Pod; it stands not upright, indeed, but so bent, as to make near a right Angle with it.

In Roses there stands a Column, consisting of many Tubes closely clung together, though easily separable, each leading to their particular Cell, the Stamina in a great Number placed all round about.

In *Tithymalus*, or Spurge, there rises a Tricoccus Vessel, that, whilst it is small, and not easily discernable, lies at the Bottom till it is impregnated, but afterwards grows up, and stands so high upon a tall Pedicle of its own, as would tempt one to think, that there were to be no Communion betwixt this and the Apices.

In the Strawberries and Raspberries, the Hairs which grow upon the ripe Fruit (which I suppose, may be surprising to some,) are so many Tubes leading each to their particular Seed, and therefore we may observe, that in the first Opening of the Flower there stands a Ring of Stamina, within the Petala, and the whole inward Area appears like a little Wood of these Hairs or Pulp, which, when they have received and conveyed their Globules, the Seeds swell, and rise in a carneous Pulp. Thus far Mr. Morland.

We may observe a Vessel at the Bottom of the Pistil of the Lily, which Vessel we may call the Uterus, or Womb, in which are three Ovaries filled with little Eggs, or Rudiments of Seed found in the Ovaria, which always decay, and come to nothing, unless impregnated with the Farina of the same Plant, or some other of the same Kind; the Stamina also serve for the Conveyance of the male Seed of the Plant to be perfected in the Apices, which, when ripe, burst forth in little Particles like Dust; some of them fall into the Orifice of the Pistil, and are either conveyed thence into the Utricle, to fecundify the female Ova, or lodged in the Pistil, where, by their magnetick Virtue, they draw

draw the Nourishment from the other Parts of the Plant into the Embryos of the Fruit, making them swell, grow, &c.

In Flowers that turn down, as the Cyclamen, and the Imperial Crown, the Pistil is much longer than the Stamina, that the Dust may fall from their Apices in sufficient Quantities on the Pistil, for the Business of Impregnation.

Mr. *Geoffroy* assures us, That in all the Observations he had made, the cutting off the Pistil before it could be impregnated by the Farina, actually rendered the Plant barren for that Season, and the Fruit abortive.

In many Kinds of Plants, as the Oak, Pine, Willow, &c. the Flowers, Mr. *Geoffroy* observes, have their Stamina and Apices, whose Farina may easily impregnate the Rudiments of the Fruit, which are not far off.

Indeed there is some Difficulty in reconciling this System with a certain Species of Plants, which bear Flowers without Fruit; and another Species of the same Kind and Denomination, which bear Fruit without Flowers; such are the Palm, Hemp, Hop, Poplar, &c. which are hence distinguished into male and female; for how should the Farina of the male here, come to impregnate the Ova of the female?

This Difficulty Mr. *Geoffroy* solves, by supposing the Wind to be the Vehicle that conveys the male Dust to the female Uterus, which is confirmed by an Instance of *Jovianus Pontanus*, of a single female Palm Tree growing in a Forest, which never bore Fruit, till, having risen above the other Trees of the Forest, and being then in a Condition to receive the Farina of the male by the Wind, it began to bear Fruit in Abundance.

As to the Manner wherein the Farina fecundifies, Mr. *Geoffroy* advances two Opinions:

First, That the Farina being always found of a sulphureous Composition, and full of subtil and penetrating Parts (as appears from its sprightly Odour,) which, falling on the Pistils of the Flowers, there resolves, and the subtlest Parts of it, penetrating the Substance of the Pistil, excite a Fermentation, which putting the latent Juices of the young Fruit in Motion, occasions the Parts to unfold the young Plant that is inclosed in the Embryo of the Seed.

In this Hypothesis, the Plant in Miniature is supposed to be contained in the Seed, and to want only a proper Juice to unfold its Parts, and make them grow.

The second Opinion is, That the Farina of the male Plant is the first Germ, or Semen of the new Plant, and stands in need of nothing to enable it to grow or unfold, but a suitable Nidus with the Juice it finds prepared in the Embryo of the Seed, or Ovary.

It may be observed, that these two Theories of vegetable Generation, bear a strict Analogy to those two of animal Generation, viz. either that the young Animal is in the *Semen Masculinum*, and only stands in need of the Juice of the Matrix to cherish and bring it forth; or that the female Ovum contains the Animal, and requires only the male Seed to excite a Fermentation.

Mr. *Geoffroy* rather makes the proper Seed to be in the Farina, inasmuch as the best Microscopes do not discover the least Appearance of any Bud in the little Embryos of the Grains, when they are examined, before the Apices have shed their Dust.

In leguminous Plants, if the Petala and Stamina be removed, and the Pistil, or that Part which becomes the Pod, be viewed with the Microscope before the Flower be open, those little green transparent Vesiculæ, which are to become Grains, will appear in their natural Order, yet still shewing nothing else but the mere Coat, or Skin of the Grain.

If you continue to observe the Flowers as they advance for several Days successively, you will find them to swell, and, by Degrees, to become replete with a limpid Liquor; in which, when the Farina comes to be shed, and the Leaves of the Flower to fall, there may be observed a little greenish Speck, or Globule, floating about at large.

There is not at first any Appearance of an Organization in this little Body; but, in Time, as it grows, you may begin to distinguish two little Leaves like two small Horns; as the little Body grows, the Liquor diminishes insensibly, till at length the Grain becomes quite opaque; and upon opening it, the Cavity will be found filled with a young Plant in Miniature, consisting of a little Germ, or Plantula, a little Root, and the Lobes of the Bean or Pea.

The Manner wherein this Germ, of the Apex enters the Vesicula of the Grain, is not very difficult to determine; for, besides that the Cavity of the Pistil reaches from the Top to the Embryos of the Grains, or those Vesiculæ, have a little Aperture corresponding to the Extremity of the Cavity of the Pistil, so that the small Dust, or Farina, may easily fall, or find an easy Passage in the Aperture in the Mouth of the Vessels, which is the Embryo of the Grain.

The Aperture, or Cicatrix, is much the same in both Grains; and it is easily observed in Peas, Beans, &c. without a Microscope.

Dr. *Patrick Blair*, treating of the Generation of Plants, says, That a vegetative Life is common to them, as well as Animals; and that the Propagation or Production of the Species is the Effect of the vegetative, not the sensitive Life in Animals, as well as in Plants; and that if there be a Necessity of the Concurrence of two different Sexes in Animals, at the begetting or generating of the Species, the same Necessity must be in Plants too; for as a Cow, a Mare, a Hen, a Reptile, an Insect, &c. cannot produce an Animal without the Male, no more can it be supposed, that a Plant can produce fertile Seed without the Concurrence of the male Plant, or the male Parts of the Plant.

Mr. *Ray* says, That he will not deny, that both Trees and Herbs may produce Fruit, and even come to Maturity, without the male Seed being sprinkled upon them. For though most Birds do not lay Eggs without Congress of the Male, yet the Hen often does it without copulating with the Cock, but then these Eggs are barren and Wind Eggs; just so, though a female Plant may produce Seed of itself, yet that Seed is never fertile. For,

First, As the Work of Generation in Animals does not proceed from their animal or sensitive Life, but from their vegetative, which being the same as in Plants, that Operation must be performed after the same Manner in both; therefore, as there is a Necessity of two different Sexes in Animals, it must be so too in Plants.

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Secondly, As passive feminal Matter in female Animals cannot be productive or fertile of itself, without being impregnated, animated, or its Particles set in Motion and dilated by the active Principles of the male feminal Matter; neither can the female Seed in Plants be rendered fertile, until it be impregnated by the *Farina fecundans* from the male Parts of the Plants.

As to the Flowers of Plants, if they were not assisting to, or if there were not some extraordinary Use from them in the Perfection of the Seed, they would not be so often observed upon Plants as they are. But since there is no Fruit or Seed without a previous Flower, and since where the one is obvious the other is conspicuous, and since one is scarce to be observed with the naked Eye, neither is the other, this implies a Relation between them, that the one of them is not to be expected without the other.

It is true, there may be Flowers upon a Plant, where the Fruit is seldom seen, especially in these Northern Climates; such as the *Pervinca*, the *Nymphaea alba minima*, and several others; where the Plant exhausts the nutritious Juice, in pushing forth Tendrils or creeping Roots, which so weaken the Plants, as not to be able to bring the Fruit to Perfection; but there is no Fruit or Seed to be seen, unless a Flower has been sent as a Messenger before it, to give Notice of its Approach; though it is not always upon the same Plant, yet it is still upon some other Plant of the same Species; for the Flowers are to be seen upon distinct Plants, different Branches, or different Parts of the Branch from the Fruit, in the *Albies*, *Corylus*, *Nux Juglans*, &c. the *Mercurialis*, *Spinachia*, &c.

But the Fruit never appears, or never begins to increase upon these Plants, till the Flower is spent and gone; therefore they must serve for another Use, than to be merely ornamental; for if that were their principal Use, they would be always conspicuous, which they are not for the most Part in apetalous Flowers; and they would always be to be seen, and never be hid; which is not so in the *Asarum*, *Hydrocotyle*, &c. where, though the Flower is large enough in Proportion to the Fruit, yet it is not to be seen, unless the Leaf be turned up, and both Flower and Fruit be narrowly searched for.

The *Frumenta* and *Gramina* have their staminateous Flowers; yet in some of them the Flower is seldom to be seen, unless the Spike be shaken, and then the Apices will appear.

The *Polypodium*, and other capillary Plants, have regular Flowers, which precede the minute *Capsula* or Seed Vessels, but neither of them are conspicuous without a Microscope.

From these Instances it appears, that Flowers are not constantly a Guard to preserve the tender Embryos from the Injuries of the Air, for then the Flowers must always have been upon the same Pedicle with the Fruit.

Therefore, since the Appearance of the Flower is the first Step towards the Production of the Seed, whether both be upon the same Pedicle or not, it necessarily follows, that the one must contribute towards the bringing of the other to Perfection.

The Ancients taking Notice, that several Plants did produce Flowers and had no Seeds, and that other Plants

of the same Species, and sown from the same Seed, did produce the Seed without a previous Flower, they were ready to call the one male, and the other female, without any Notion that the one was assisting to the other; for they looked upon such Flowers to be only barren, and therefore they called those which had Flowers *female*, and those that produced the Fruits, *male Plants*. Thus *Mercurialis* is called *Spicata Fœmina*, and *Tesciculata Mas*. That which produces the Fruit must needs be the Female, as the female Animal brings forth the Fœtus; therefore the *Tesciculata* must needs be the Female, and the *Spicata* the Male.

Where-ever the Plants are annual, these with the Flowers, and such as have the Seed, are always near to each other; but where the Root is perennial, and where the Plant is more frequently propagated by the Root than the Seed, the Case alters; for there being no Need of the Seed to propagate the Plant, there is the less Need of the Flower to be nearer to the Plant which produces the Seed.

So the *Bryonia* and the *Lupulus* are frequently seen to grow, the one to produce the Berry, and the other the squamous Fruit; when the Plants which produce the male Flowers of the one or the other, are at a great Distance. And this is so far from being an Objection against the Necessity of two Sexes in Plants as well as in Animals, that it is an Argument to confirm it; for it shews the wonderful Contrivances in order to preserve the Species, when the ordinary Means of propagating it by the Seed cannot be so conveniently attained.

These, and more that might be produced, being evident Proofs of two Sexes in Plants, as well as in Animals, we shall in the next Place, give some Experiments to confirm this in a negative Way, as has been already done in a positive.

When Plants have been deprived of their male Flowers, or male Parts in the Flower, they either produced no Seed at all, or if they did, they became abortive, dried up, or dwindled away; or though the Seeds did come to Perfection, they were barren, or did not produce.

Experiment 1. Mr. *Geoffroy* having cut off all the staminateous Tufts of male Flowers from the Top of the Stalk in the Maiz or *Turky Wheat*, as soon as they appeared, and before the Spike loaded with the Embryos of the *Semen* had put forth from the *Ala* of the Leaves, several of these Embryos decayed and dried up after they were pretty big; but some Grains upon their Pedicles all along the Spike swelled considerably, and seemed to be full of the Bud, and were consequently fertile, while all the others miscarried, and there was not one Spike where the whole Seeds did ripen to the full.

This Experiment is a sufficient Proof of the Use of the male Flowers in this Plant; for whatsoever that is which flows from the *Racemi* of these Flowers, it seems it must be conducive not only for the Impregnation of the Seed, but also for the Growth and Impregnation of the Fruit.

At present we shall shew, that what Nourishment is usually furnished by the Pedicle to the Embryos, does not appear to be capable to dilate or expand itself, or contribute to the continual Supply of nutritious Particles, unless the Embryos were animated or enlivened by

by the Spirit which should have flowed from the male Flowers; so that they were so debilitated and weakened, in ascending from the Body of the Plant towards the Embryos, before they could arrive at them, that they, which otherwise might have served for the Augmentation and Increase of all the Embryos upon the Spike, could not now do any Thing more than contribute to the ripening of a few. And although Mr. *Geoffroy* might have imagined, that these few Seeds which came to Perfection were fertile also, because they were full of Germs, yet he could not be sure of that, unless he had sown the same Seeds next Season, and tried whether they would chit or not.

Gardeners who buy Onion and Leek Seed brought from *Straßburg*, commonly try the following Experiment: They put a few of the Seeds into a Pot of Water mixed with Earth, and if they find they begin to spring, or send forth the seminal Leaf or Fibre of the Root, after a few Days, they judge of the Product of it; and notwithstanding all the Seeds without this Trial may seem to be productive, being equally firm, hard, and solid, perhaps not more than one Third of them will prove fertile.

And this Barrenness may proceed, either because they had never been impregnated by the male Parts of the Flower, or that they had been too much exposed to the Air; being some Time or other too much moistened, and not afterwards been carefully dried, or have been kept too long, by which Neglect they loose their Spirit or Life.

Now, if the Fullness, Solidity, and Firmness of a Seed is not a sure Sign of its Fertility, then Mr. *Geoffroy* might have been mistaken in his Opinion of the Fertility of these Seeds in the Maiz, since he did not make any Trial of it, by committing it to the Ground.

In like Manner, as to his second Experiment of the *Mercurialis Dioscoridis*, where he raised some Plants which had the Fruit, and others which had the stameneous Flowers, and removed the floriferous Plants before the Flowers were blown, every one of the Seeds upon the fructiferous Plants, except five or six, miscarried; which Seeds were so full, that he was persuaded they were capable of producing new Plants, and the like was found by *Camerarius* in the *Cannabis*. Yet inasmuch as neither of them tried the Experiment, by sowing the same Seed the second Year, they could not be sure but that they might have failed in their Expectation.

Mr. *Bobart*, Overseer of the Physick Garden at *Oxford*, many Years since, which was before the Doctrine of the different Sexes of Plants was well understood, being herbarizing, found a Plant of the *Lychnis sylvestris simplex*, whose Flowers, though they had Stamina, had no Apices; and taking Notice, that this was not only in one, but in all the Flowers upon the same Plant, he imagined it might be a new Species; and therefore marked the Plant, and took Care to have it preserved till the Seeds were ripe; and then, they being full, hard, and firm, and to outward Appearance full of Germ, he sowed them in a proper Place in the Garden the next Season, but not a Plant sprung up from them.

These and other Instances, set the Opinion of the different Sexes of Plants upon another Footing than has been received by most of our modern Authors; for it

imports, that it is not the Nourishment of the gross Substance of the Seed itself which is hereby meant, nor the Increase of the Seed Vessel, which is thereby designed; for (as is already observed) a Hen can lay an Egg, without having before had Congress with a Cock; and this, when newly laid, shall be of the same Bigness, Colour, Taste, and Smell, with another Egg which has been cocked (as they call it); *i. e.* which has been fecundated by the masculine seminal *Materies*: But the Difference will appear, when both are put under the Hen, in order to be hatched; for the one shall pullulate or chit, and the other shall become fetid and rot.

The Case is just the same with the Seed of a Plant, it may be augmented and increased in its Bulk; it may become firm, hard, and solid, and have all the Tokens of a perfect Ripeness; the Seed Vessels may be enlarged, and the Pulp or *Parenchyma* of the Fruit may be augmented; and yet the Particles of the Seed may remain crude, indigested, and incapable to be explicated and dilated, or set in a suitable Motion, whereby to protrude the *Fibrilla* of the Root at one End, and the seminal Leaves at the other; except it has before received some extraneous Matter, or some active Particles from the male Parts of the Flower, or from the male Flower itself.

In order to confirm the Necessity of two Sexes of Plants, as well as in Animals, this familiar Consideration may be added: That the Fertility or Barrenness of any Tree, in the more or less fruitful Seasons, may be known to ignorant or less curious Persons, by the Quantity of the Flowers which appear in the Spring Time; and that not only in Trees alone, where the Flower and Fruit are upon one and the same Foot Stalk, but also in such Trees, where the Flowers are upon distinct Trees, or separate Places upon the same Tree; for it is easy to determine, by the Catkins or *Juli* upon the Walnut, Filbert, or Hazle Trees, whether such or such Trees will be fertile or barren for the ensuing Season, before any of the Embryos begin to break, be pushed forth, or appear.

Having already treated of the male and female Parts of Flowers, we shall next consider their Use.

Flowers, in this Respect, may aptly be divided into that of male Flowers, which (as has been before observed) were formerly reputed barren; and the Plants which produce them were also called female Plants, because those Persons not having any Notion of different Sexes in Plants, they were called female, upon Account of their Weakness; or if they had any Thought of Sexes in them, it was only illusive.

The Ancients were ignorant of those which are now-a-days called hermaphrodite Flowers; and they, not having a true Notion of Sexes of Plants, could not imagine, that the Parts of both Sexes should be in one Flower, upon one and the same Foot Stalk.

And although hermaphrodite Animals bear the least Proportion in the animal Kingdom, yet Hermaphrodites have the greatest Share in the vegetable, though they are not so numerous as they have been supposed to be; for, upon a strict Examination it will be found, that a great many more Plants have distinct male and female Flowers, than was formerly believed.

The Necessity of different Sexes in Plants having been demonstrated,

demonstrated, and that the female Seed, though it should ripen to the full, cannot be fertile, except it be impregnated by what it receives from the male Parts of Flowers, we shall next explain the Organs of Generation in both Sexes.

In the animal Oeconomy, there are, besides those Vessels that are destinated for Nutrition, and the Secretion of the several Juices in the Body, spermatick Vessels, which consist of *Præparantia*, *Deferentia*, and *Continentia Semen*. The *Præparantia* in Males, are the Blood Vessels and the *Testes*; the one conveys the Blood, and the other separates the *Semen* from Blood, and elaborates it.

So likewise in Plants there are Vessels that receive the nutritious Particles from the Earth, and convey it to the Extremity of the Plant; some of which tend directly to the Leaf, and others to the Flowers.

Those which go to the Foot Stalk of the Flower may not improperly be called spermatick Vessels, for it is from them that the seminal Particles in male, female, and hermaphrodite Flowers are separated; therefore the Foot Stalks of the hermaphrodite Flowers are proportionably larger than those either of the male or female; they have a double Office, and contribute successively to both.

In those where the Calyx becomes the Fruit, the greatest Supply is furnished to it first, and distributed in its cortical Parts, as is visible in the Rose; in which the Foot Stalk is so far enlarged at first, as to be of an equal Bigness with the Bud.

After the Calyx is thus formed, the next Distribution is to the inner or central Part of the Flower, which Dr. Grew calls Attire, and where the Pistillum becomes the Fruit; the Pistillum and Stylus are formed at the same Time with the Stamina and Apices.

The Stylus at the very first acquires both its due Length and Bigness; for the nutritious Particles ascending in the Center never stop till the Stylus is stretched out to its full Length; and in such as are furnished with a peculiar Apex, that is formed first; the Neck of the Stylus, or that Part next to it, is the biggest; from thence it gradually decreases in its Grossness, till it comes to the Pistillum. This is easily perceived by those who will take the Pains to open the Bud of a Lilly, Tulip, &c. before they are half blown.

The Stamen is furnished next with an extraordinary Supply of the nutritious Particles before the Flower is blown; these, whether fewer or more, are at first brought to their proportional Largeness, being round and juicy.

The Apex is the third which receives this extraordinary Supply of the Nourishment, for after that the Stylus is formed, that it may lean to it after the Vessels of the Stamen are extended to their full Length, and so formed, that they can convey such an extraordinary Quantity of Particles as may fill up the Capacity of the Apex, it is then more enlarged than ever after; for if the Flower of a Lilly be opened before it be blown, the Apex will be found to be full as long as the Stamen; for as the one Half of the Apex covers the Stamen, fixed to its Center, so the other Half of it is so far extended above the Stamen, as the Stamen remained uncovered below it, towards the Pedicle or Foot Stalk.

The fourth Part of a Flower is the Petala, which receives this extraordinary Supply of Nourishment before the blowing; these upon the Reverse, are first enlarged towards the Pedicle, and are afterwards extended and stretched forth in Proportion to the Enlargement of the Attire; at first they are all grosser, and more succulent towards the Origin, and gradually become thinner and broader. The Stamina of monopetalous Flowers do, for the most Part, arise partly from the Petalon itself, and partly from the Calyx; especially if the Stamina correspond in Number to the Petala, as in the *Hexapetale*, or *Polypetale Liliaceæ* of Tournefort, where every Stamen arises opposite to the Middle of the Petalon.

This Observation (how and when this more than ordinary Supply of Nourishment is carried to the Flowers) easily demonstrates wherein the Analogy of the Organs of Generation in Plants and Animals consists.

In Animals, the seminal Matter is received by proper Vessels from the same Blood from whence the other Secretions, fit for the Preservation of the animal Oeconomy proceed; so that the Blood in Animals being the same with the Sap in Plants, and both being conveyed after the same Manner throughout the several Bodies, it necessarily follows, that the one as well as the other, must have proper Vessels for Secretion of the seminal Matter.

Let it then be considered, That the Sap or nutritious Juice ascends in common to the Pedicle of the Flower, as the Blood flows by the *Aorta descendens*; and that, at the Calyx or Bottom of the Flower, some Share goes to one Part of it, and some to another; as the Aorta sends one Branch to the spermatick Vessels, and the Remainder of it goes to perform the other Functions; and as a Part of the Sap is separated by the Pedicle of the Flower, when the Remainder is distributed throughout the remaining Parts of the Plant, so the *Arteria præparans* goes directly to the Testes in the Males, and Ovarium in the Female: And in Flowers, some Vessels tend directly to the Calyx (if it becomes the Fruit) or to the Perianthium (if there be any), some to the Petala, some to the Stamina, some to the Pistillum or Uterus, as it is called by *Malpighius*.

These Things being seriously reflected on, we must of Necessity conclude,

1. That the same due Care is taken to elaborate and prepare the more subtle and impenetrable Particles of the nutritious Juice in Plants, as of the Blood in Animals.

2. This Substance so prepared, as it must be designed for some extraordinary Use, so that this Use can be no other than that of being the Means of fecundating the female Seed in Plants, as the other is of the feminine Ova in Animals.

If any one shall take a Flower full blown, and pull one of the Stamina from the Pedicle, he will find a rough viscid Liquor, like to the Sperma, which remains here till its most subtle Parts have ascended the Stamen, or perhaps the more gross Particles might have remained there, after the most subtle had ascended, before the Flower was blown; this is as plain and demonstrable as can be in the Lilies, and in the Orange Lily, and most of the *Martagon* Lilies, there is a Contrivance more obvious:

This viscid Liquor ascending by parallel Ducts to the Apex, there this subtile Matter is retained till it is farther elaborated by the Evaporations of the more humid and aqueous Particles, by the Heat of the Sun; and then it becomes a most subtile, fine, impalpable Dust, which is then said to be ripe, and is called the Farina.

Dr. Blair, after having given the Sentiments of seven different Authors upon the Subject, proceeds to give his own, without subscribing to the Sentiment of either the one or the other; and endeavours, by a strict Examination of the Flowers themselves, to find out which of these two Opinions, so diametrically opposite to each other, are most agreeable to Fact.

But before he begins, he lays down this general Maxim, which he takes for granted, That *Nature is uniform in all her Operations, and never recedes from those Rules laid down by the wise Disposer of all Things at the Creation, by performing the same Thing after two different and contrary Methods*; and thence concludes, That if the Farina be a Congeries of seminal Plants in one Species, it must be so in all.

If there be an open and direct Passage, or though it be not so direct, yet if by any direct Passage, by which it can be demonstrated, that one single Grain of the Farina can enter every individual Seed in one Plant, it must be so in all; but if neither of these hold good, and if it can be proved by ocular Inspection, without the Assistance of a Microscope, in those very Plants exemplified by Mr. Morland, Mr. Geoffroy, and Mr. Bradley, that the Farina in Substance cannot enter the seminal Vessel; or if it does, that there is no direct Passage for it to enter each particular Seed, after it has got into the *Capfula* or *Siliqua*; then he hopes, both their Queries, Suppositions, and assertions must fall.

As for the *Corona Imperialis*, the first Example given by Mr. Morland, the Flower of which hangs downwards, though he does not deny but its Stylus may be hollow all the Way, and that it may be open at the Extremity, yet by its Situation, and several other Circumstances, it does not seem to him to favour this Opinion.

For first, as there is a continual Conflux of Particles through the Skin in animal Bodies, it is also so in Vegetables: This appears by the immediate fading of Flowers, or any other Part of the Plant, after it has been plucked off; which proceeds from the Evaporation of the Particles in the little Tubes, without any more succeeding in their Place.

He thinks it as reasonable to suppose, that these Particles flow cut by the hollow Stylus, as by any other Part, and also more sensibly there than elsewhere, because of their being concentrated within such narrow Bounds; and that if these Particles descend by the Stylus hanging downwards, the Particles, or rather Grains of the Farina, can never ascend that same Way.

2dly, That if it should be granted, that these Grains did ascend by the Stylus, how do they get into the seminal Vessel? That being closely shut up, as will appear to any one who will observe it.

3dly, Whereas Mr. Morland supposes, That the Rain either washes it, or the Wind shakes it down the Tube, till it reaches the seminal Vessel; Dr. Blair observes, That the

Extremity which is the upper Part of the Stylus in an erect Flower, must be the lower in a dependent one; so that if either the Rain or Wind have Access to it, it must necessarily either wash or drive it away from the seminal Vessel, which is now the Stylus.

But here the Doctor takes notice of another Contrivance, for answering that Purpose, *i. e.* a Sort of a Pelvis or Cistern, called by *Linnaeus* *Nectarium* situated at The Origin or Root of each Petalon, filled with a viscous Liquor which continues there, and never exceeds its Bounds so long as the Petalon is in Health: For since the Apices are here so artfully fixed, that they turn every Way with the least Wind, as Mr. Morland rightly observes, when they burst, and the Farina is driven to and fro, though it cannot so easily enter the Tube, yet it may conveniently be blown up towards the Orifice of the Petala surrounding the Stylus, where it is stopped or staid by this Viscosity, till it has performed its Office.

To confirm this, he instances Mr. Fairchild, who, he says, being persuaded that this viscous Liquor did some Way or other contribute towards the fructifying of this Plant, but not understanding how it did so, he tried the Experiment, by wiping this Liquor off as soon as it was deposited in the Pelvis, and the Flower which he so served did not bear any Fruit.

And the Way the Doctor accounts for this is, that the Humidity being removed, the Farina is no sooner blown upwards, than it immediately falls down, without producing any Effect; and that which he takes to be a Confirmation of this is, that both Tulips and Fritillarias have this Pelvis or Basin, yet it is for the most Part dry and empty; because the Flowers of the former being erect, they have no such need of this Liquor to retain the Dust; for that the Rain having immediate Access to them, may wash the Dust towards the Origin of the Petala, where it can remain till it has performed its Office; whereas the Rain having no Access to the inner Surface of the Flower of the *Corona Imperialis*, it is naturally endowed with this Humidity, deposited there by several excretory Ducts, in order to render it fit for the Purpose: And *Malpighius* himself takes Notice of this Singularity in this Flower, though he ascribes no Use to it.

The next Example proposed by Mr. Morland, is the yellow Lily, which, according to his Figure, is represented as having Apices equally high with the Top of the Stylus, and the Petala over-topping each other; whereas he says, that by the narrowest Inspection he ever could make, the Top of the Apices (they being then perpendicularly situated) reaches no higher than the Neck of the Button upon the Top of the Stylus, and that this is before the Apices begin to burst and shed the Dust; but as soon as the Flower begins to open, they depart from the Stylus, and force the Petala outwards, by a certain Elasticity, and expand themselves; this being done, they immediately change their Posture from a perpendicular to an oblique or horizontal one; nor do they ever pour out their Dust or Farina, till they can conveniently drop it upon the Bottom of the Flower, and towards the Root of the Pistillum.

But taking it for granted that it was so, the Top of the Stylus (which the Doctor calls the Button, in Opposition to the *Apices Stamina*), he says, is so compact, and

and of so firm a Substance, that it is next to impossible, that the Farina in Substance, or integral Parts, can pass through it.

If the integral Parts, the complete Grain, the minute *Globuli*, in which the whole seminal Plant is contained, cannot then enter, the whole compound must be dissolved, and the minute seminal Particles in this small Grain of Dust must be disunited; and if so, How shall these again come to cement, so as to make up one continued Body? Or how shall this little Body, so united, penetrate a second Time the Partition Wall betwixt the Stylus and Pistillum? And again, How shall it find out its Way to its Nest, in the proper Embryo of the Seed?

The Doctor takes Notice of the White Lily, the Orange Lily, the *Martagon Lily*, &c. as Objections to the Opinions of Mr. *Morland*, *Bradley*, &c. and also mentions the Iris, as a most pregnant Instance, that the Farina cannot so much as come at the Pistillum; for having six Petala, the three Stamina with long Apices lie hid between the three Petala which hang downwards, and three large Expansions of the bifid Stylus, and the upper Part of the down-hanging Petalon: The Farina can never reach the Center of the Stylus, though it were hollow, which it is not, but must descend along its Outside, to the Top and Outside of the Rudiment of the Fruit, there to emit its Effluvia.

These and other Instances, he concludes, are sufficient Proof, that the Farina cannot enter the Stylus, penetrate into the Pistillum, or inner Part of the seminal Vessel, nor have the least Access to the Embryo of the Seed.

As to the Objection, That there is not Passage sufficient to admit the male Seed into the Uterus, or even into the Ovaries, it is thus answered:

If it be considered how every Flower, when it is prepared for the Act of receiving the male Seed, is so much under the Influence of the Sun, that the Petals open at its Approach, and shut up again at its Departure, it very well explains how the Pistillum, or female Parts of Generation, are relaxed at one Time more than another, *i. e.* that the female Parts are more relaxed at the opening of the Flower, than when the Flower is shut up; for the Flower Leaves adhering to the Bottom of the Pistillum, must consequently, when they bend back, put every Part of the Pistillum into a different Posture to that in which it was when the Petals were shut.

And it is certain, that it is the Presence of the Sun that ripens the male Dust in the Apices, and opens the little Cafes in which it is contained, giving them a Springiness that flings forth that Dust as soon as it is ripe, so as to scatter it to a considerable Distance. The female Parts are at this Time dilated by the opening of the Flower Leaves, and the Apices and Chives, concurring at the same Time in flinging forth their male Dust, answer the same End in the Generation of Plants, that the Act of Copulation does among Animals.

Having thus given several Reasonings and Arguments used by various Authors, who have made it their Study to investigate the Mode of Generation of Vegetables, whether the Impregnation of them proceeds from the *Farina fecundans*, or male Dust, entering the Uterus of

Plants in Substances, or by Effluvia, I shall not take upon me to determine the Dispute; especially since Mr. *Boyle* has proved, that all Effluvia are subtile Particles of Matter; so that it matters not how small or minute these Particles are, since a Body in its first State may be so minute as to be scarcely perceptible.

I shall therefore conclude with mentioning a few Experiments of my own, which I communicated to Dr. *Patrick Blair*, which he improved as a Proof of his Opinion of Effluvia; and Mr. *Bradley* also as a Proof of the Farina entering the Uterus in Substance, and leave the curious Enquirer to determine on that Side of the Question, to which Reasoning and Experiment shall influence him.

I separated the male Plants of a Bed of Spinach from the female; and the Consequence was, that the Seed did swell to the usual Bigness, but when sown it did not grow afterwards; and searching into the Seed, I found it wanted the *Punctum Vita*, or what *Geoffroy* calls the Germen.

I set twelve Tulips by themselves, about six or seven Yards from any other, and as soon as they blew, I took out the Stamina with their Summits so very carefully, that I scattered none of the male Dust; and about two Days afterwards I saw Bees working on a Bed of Tulips, where I did not take out the Stamina; and when they came out they were loaded with the Farina or male Dust on their Bodies and Legs; and I saw them fly into the Tulips, where I had taken out the Stamina, and when they came out, I found they had left behind them sufficient to impregnate these Flowers, for they bore good ripe Seeds which afterward grew.

In a Parcel of Savoy, which were planted for Seed near white and red Cabbages, the Seeds, when sown, produced half red, and some white Cabbages, and some Savoy with red Ribs, and some neither one Sort nor the other, but a Mixture of all Sorts together in one Plant, which I suppose might happen by the Effluvia of the different Sorts impregnating the Uterus of each other.

In a Letter communicated by *Paul Dudley*, Esq; to the *Royal Society*, written from *New-England*, he mentions the interchanging of the Colours of the *Indian Wheat*, if the various Colours are planted in Rows near each other; but if they are planted separately, they constantly keep to their own Colour; and this interchanging of Colours has been observed, when the Distance between the Rows of Corn has been several Yards, though he says, if there happens to be a high Board Fence between the different coloured Corns, the Alteration of Colours is entirely prevented.

It is from different Flowers impregnating each other, that the several Varieties have been produced; and this gives new Light to the Florists, for raising a much greater Variety of Flowers; for by planting the different coloured Flowers near each other, so that the Flowers when fully blown may be intermixed, their Farina will impregnate each other, so that the Seeds will produce variegated Flowers partaking of both Colours. But it must be observed, that Flowers of different Genera will not impregnate each other, therefore the Plants must be of the same Genus which are placed together.

Cucumbers and Melons always produce male and female

male Flowers upon different Parts of the same Plant; the male Flower (which appears upon a slender Foot Stalk, and has a large Style in the Middle, covered with an Orange-coloured Farina) is by the Gardeners commonly called false Blossoms, and are sometimes by unskilful Persons pulled off soon after they appear, supposing that they weaken the Plants, if suffered to remain, which is a very great Mistake; for, in order to try this Experiment, I planted four Holes of Melons in a Place pretty far distant from any other; and when the Flowers began to appear, I constantly pulled off all the male Flowers from Time to Time before they opened; the Consequence was, that all the young Fruit dropt off soon after they appeared, and not one single Fruit remained to grow to any Size, though the Vines were equally strong with those which I had planted in another Place, where I suffered all the Flowers to remain upon them, from which I had a great Quantity of Fruit. But this Doctrine is now so well established among the Gardeners, being confirmed by Experience, that they now carry the male Flowers of the Cucumbers and Melons to the female, if there are none situated very near them, and gently strike the Farina of the male, into the Bosom of the female Flowers, and thereby set the young Fruit, which would otherwise drop off.

There are some Persons, who still object to this Theory of the Generation of Plants, from having observed some Plants which were termed female, growing singly, and at a very great Distance from any male Plants of the same Kind, which had for some Years produced Seeds which were perfect, and grew when sown; and, indeed, I was myself a little staggered in my Opinion, on having observed a female Plant of the white Briony, which grew singly in a Garden, where there were no other Plants of the same Kind; which for several Years produced Berries, which grew and flourished perfectly well. This put me upon examining the Plant more carefully than I had before done, when I found there were great Numbers of male Flowers intermixed with the female, on the same Plant; and since then I have frequently found the same in many other Plants, which are generally male and female in different Plants, yet have sometimes both Sexes on the same Plant; so that the Objections which have been made to this Doctrine, may not have proper Evidence for their Support.

It is certain, that the female Plants may produce Fruit, without the Impregnation of the male; but it is not certain, that this Fruit or Seed will, if sown, produce another Plant. What has been so often related by Travellers and Historians, of the Necessity of the male Palm Tree being near the female, in order to render it fruitful, hath been fully refuted by Father Labat, in his Account of *Africa*, where he has treated of the several Sorts of Palms: He says, That he observed in *Martinico* a large Palm Tree, which grew by the Side of a Convent, which produced Plenty of Fruit, though there was no other Palm Tree growing within two Leagues of this; but he also observed, that none of these Fruit would grow, though they had many Trials of them; so that they were obliged to procure some Fruit from *Barbary*, in order to propagate these Trees. He likewise adds, That the Fruit which grew

on this female Tree, never ripened so perfectly, nor was so well tasted, as those which came from Trees which had stood near some of the male: Therefore we may conclude, that the Fruit or Seed may be produced by the female Plants of most Kinds, without the Assistance of the male Sperm, which may appear to Sight perfect, and fit to produce others; but if we examine the Seeds, we shall find, that most of them have not the Germ or little Plant inclosed, nor will grow if they are sown.

From these and many other Experiments, it is very plain, that there is a Necessity that the Embryo of the female Flower should be impregnated by the Farina or male Dust, in order to render the Fruit perfect; but how, or in what Manner, it is performed, is what we can only guess at, since in the Generation of Animals, our greatest Naturalists differ very much in their Opinions; nor can any of them ascertain any particular Method how it is performed. I shall therefore conclude with quoting the Words of the Rev. Dr. Hales, which are a most ingenious Summary of the whole Doctrine of the Generation of Plants.

"If I (says he) may be allowed to indulge Conjecture in a Case in which the most diligent Enquirers are, as yet, after all their laudable Researches, advanced but little farther than mere Conjecture, I would propose it to their Consideration, whether from the manifest Proof we have, that Sulphur strongly attracts Air, a Hint may not be taken, to consider, whether this may not be the primary Use of the *Farina fecundans*, to attract or unite with itself elastic or other refined active Particles. That this Farina abounds with Sulphur, and that a very refined Sort, is probable from the subtil Oil which Chymists obtain from the Chives of Saffron; and if this be the Use of it, was it possible that it could be more aptly placed for the Purpose on very moveable Apices fixed on the slender Points of the Stamina, whereby it might easily, with the least Breath of Wind, be dispersed in the Air, thereby surrounding the Plant, as it were, with an Atmosphere of sublimed sulphureous Pounce? For many Trees and Plants abound with it, which, uniting with the Air Particles, may, perhaps, be inspired at several Parts of the Plant, and especially at the Pistillum, and be thence conveyed to the *Capsula seminalis*, especially towards Evening, and in the Night, when the beautiful Petala of the Flowers are closed up, and they with all the other Parts of the Vegetable, are in a strongly imbibing State. And if to these united, sulphureous, and aerial Particles, we suppose some Particles of Light to be joined (for Sir Isaac Newton has found, that Sulphur attracts Light strongly;) then the Result of these three by far the most active Principles in Nature, will be a *Punctum saliens* to invigorate the seminal Plant; and thus we are at last conducted, by the regular Analysis of vegetable Nature, to the first enlivening Principle of their minutest Origin."

GENISTA. *Lin. Gen. Plant.* 766. *Tourn. Infr. R. H.* 643. *Tab.* 412. Broom; in *French, Genêt.*

The Characters are,

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The Empalement of the Flower is of one Leaf, tubulous, and divided into two Lips; the upper Lip is deeply cut into two, and the under into three equal Parts. The Flower is of the Butterfly Kind; the Standard is oval, acute, and remote from the Keel, being wholly reflexed; the Wings are a little shorter than the Standard, and are loose; the Keel is erect, and longer than the Standard, and is indented at the Top. It hath ten Stamina joined, which are situated in the Keel, terminated by single Summits. In the Center is an oblong Germen, supporting an ascending Style, crowned by an acute twisted Stigma. The Germen afterward becomes a roundish turgid Pod with one Cell, opening with two Valves, inclosing Kidney-shaped Seeds.

The Species are,

1. GENISTA ramis ancipitibus articulatis, foliis ovato-lanceolatis. Hort. Cliff. 355. Jointed Broom, with Branches looking both Ways, and jointed and oval Spear-shaped Leaves. This is the Chamae Genista sagittalis. C. B. P. 395. Dwarf Acorn-shaped Broom.

2. GENISTA foliis lanceolatis, ramis striatis teretibus erectis. Hort. Cliff. 355. Broom with Spear-shaped Leaves, and erect, taper, and channelled Branches. This is the Genista tinctoria Germanica foliis angustioribus. C. B. P. 395. Narrow-leaved Dyers Broom.

3. GENISTA foliis lanceolatis acutis, ramis striatis teretibus lateralibus. Broom with Spear-shaped Leaves which are acute, and taper channelled Branches proceeding from the Side of the Stalk. This is the Genista tinctoria Germanica. C. B. P. 395. Common Dyers Broom, or Wood-waxen.

4. GENISTA foliis inferioribus cuneiformibus, ramis floriferis linearibus, floribus majoribus erectioribus. Broom with lower Leaves Wedge-shaped, those on the Flower Branches very narrow, and larger more erect Flowers. This is the Genista tinctoria maxima Lusitanica, Piurna Lusitanorum. Tourn. Inst. 643. Greater Portugal Dyers Broom, called Piurna by the Portuguese.

5. GENISTA foliis lanceolatis, ramis paniculatis, caule arborescente. Broom with Spear-shaped Leaves, paniculated Branches, and a Tree-like Stalk. This is the Genista arborescens, Tartarica flore luteo. Amman. Tree-like Tartarian Broom with a yellow Flower.

6. GENISTA ramis triquetris subarticulatis, foliis tri-cuspidatis. Lin. Sp. Plant. 710. Broom with three cornered jointed Branches, and Leaves ending in three Points. This is the Genistella fruticosa Lusitanica. Tourn. Inst. 646. Shrubby Portugal Dyers Broom.

7. GENISTA foliis lanceolatis obtusis, caule tuberculato decumbente. Hort. Cliff. 355. Broom with obtuse Spear-shaped Leaves, and a declining Stalk having Tubercles. This is the Genista ramosa, foliis Hyperici. C. B. P. 395. Branching Broom with Leaves like St. Johnswort.

8. GENISTA spinis simplicibus, ramis floriferis inermibus, foliis lanceolatis. Hort. Cliff. 355. Broom with single Spines, Flower Branches without Spines, and Spear-shaped Leaves. Genista spartium minus Anglium. Tourn. Inst. Small English Broom, called Petty Whin.

9. GENISTA spinis decompositis, ramis floriferis, inermibus, foliis linearibus pilosis. Lin. Sp. Plant. 711. Broom with decomposed Spines, Flower Branches without Spines, and narrow hairy Leaves. This is

the Genista spinosa minor Hispanica villosissima. C. B. P. 395. Most hairy small Spanish prickly Broom.

10. GENISTA spinis compositis, ramis floriferis inermibus, foliis lanceolatis. Prod. Leyd. 371. Broom with compound Spines, whose Flower Branches are not prickly, and Spear-shaped Leaves. Genista spinosa minor, Germanica. C. B. P. 395. Smaller German prickly Broom.

The 1st Sort grows naturally in France, Italy, and Germany. This Plant sends out several Stalks from the Root, which spread flat on the Ground, and divide into many flat Branches which are jointed, and their two Sides are edged like a broad Sword; these are green and herbaceous, but are perennial. At each of the Joints is placed one small Spear-shaped Leaf, without any Foot Stalk. The Flowers are produced in close Spikes at the End of the Branches, they are yellow, of the Pea-bloom Kind, and are succeeded by short hairy Pods, which contain 3 or 4 Kidney-shaped Seeds. The Plants flower in June, and the Seeds ripen in September.

This Sort is propagated by Seeds, which, if sown in Autumn, the Plants will come up the following Spring; but when they are sown in Spring, the Plants rarely come up the same Year: When the Plants come up, they require no other Culture but to keep them clean from Weeds, and thin them where they are too close; at Michaelmas they may transplanted where they are to remain, and after that only require to be kept clean, for they are very hardy, and will live several Years.

The 2d Sort rises with ligneous Stalks about two or three Feet high, sending out many taper channelled Branches which grow erect, that are garnished with small Spear-shaped Leaves placed alternate, and are terminated by several Spikes of yellow Flowers, which are of the Pea-bloom Kind, but small; these are succeeded by short Pods, which turn black when ripe, and contain four or five Kidney-shaped Seeds. It flowers in June and July, and the Seeds ripen in Autumn.

The 3d Sort grows naturally in England. This hath shrubby Stalks, which rise about 3 Feet high, garnished with Spear-shaped Leaves, which are broader, and end in sharper Points than those of the former; the Branches come out from the Side of the Stalks, almost their whole Length, and do not grow so upright as those of the second; these are terminated by loose Spikes of yellow Flowers, which are succeeded by Pods like those of the second Sort. It flowers, and the Seeds are ripe about the same Time as the former. The Branches of the Plant are used by the Dyers, to give a yellow Colour, from whence it is called Dyers Broom, Green-wood, Wood-waxen, or Dyers-weed.

The 4th Sort grows naturally in Portugal and Spain. This rises with shrubby channelled Stalks 4 Feet high, sending out several Branches which grow erect; the lower Leaves are Wedge-shaped, being broad and rounding at the Top, but very narrow at their Base; those which are higher upon the Flower Branches are narrow, and equal at both Ends; the Flowers are produced in pretty long Spikes at the End of the Branches, they are larger than those of the other Sorts, and of a paler yellow Colour. They appear in

June

June and *July*, and are succeeded by Pods like the former Sorts.

This Sort is a little tender, and in very severe Frosts is often killed in *England*, where the Plants are not protected.

The 5th Sort grows naturally in *Tartary*, from whence the Seeds were brought to the Imperial Garden at *Petersburg*, and were afterward sent to *England*. This rises with a woody Stalk to the Height of 7 or 8 Feet, sending out many slender Branches, which are garnished with small Spear-shaped Leaves placed alternate; the upper Part of these Branches, for more than a Foot in Length, send out small flowering Branches, terminated by loose Spikes of Flowers, so that each Branch terminates in a Panicle of Flowers. These appear in *June* and *July*; the Seeds ripen in Autumn.

The 6th Sort hath a low shrubby Stalk, which seldom is more than a Foot high, sending out several weak Branches which are jointed, and garnished with small Leaves ending in 3 acute Parts. The Flowers are produced in loose Spikes at the Top of the Branches, they are of a pale yellow Colour, and appear the latter End of *June* and *July*, and the Seeds ripen in *September*. This Plant grows naturally in *Portugal*.

The 7th Sort hath a shrubby Stalk which declines toward the Ground, and is set over with Tubercles; it divides into a few small Branches, garnished with small obtuse Leaves. The Flowers are disposed in small loose Spikes at the End of the Branches; they are small, of a pale yellow Colour, and are succeeded by short Pods filled with Kidney-shaped Seeds. It flowers in *June*, and the Seeds ripen in Autumn. This grows naturally in *Germany* and *France*.

The 8th Sort grows naturally on open Heaths, in many Parts of *England*. It hath a shrubby Stalk, which rises about two Feet high, sending out many slender Branches, armed with long single Spines, and garnished with very small Spear-shaped Leaves, placed alternate on every Side the Branches: The Flower Branches have no Spines, these are short, and have 5 or 6 yellow Flowers growing in a Cluster at the End. They come out in *April* and *May*, and are succeeded by short turgid Pods, which contain 4 or 5 small Kidney-shaped Seeds. These ripen in *July*.

The 9th Sort grows naturally in the South of *France* and *Italy*; it was sent me from *Nice*, where it was found growing in *Penty*. This hath a shrubby Stalk, which sends out many ligneous Branches, armed with branching Thorns, composed of several sharp Thorns, which come out from each other, but the short Branches which produce the Flowers have no Spines; these are garnished with small hairy Leaves of different Forms, some of them being as narrow as Hairs, and others are of the Spear Shape; the Branches are terminated by Clusters of yellow Flowers, which are succeeded by short compressed hairy Pods, filled with Kidney-shaped Seeds. The whole Plant has much the Appearance of the common Furz or Gorse, but is very hairy, and the Flower Branches being without Thorns, are the most obvious Distinctions.

The 10th Sort grows naturally in *Germany*. This rises with shrubby Stalks to the Height of 3 or 4 Feet, and divides into many slender Branches, armed with

compound Spines, and garnished with Spear-shaped Leaves placed alternate; those Branches which produce the Flowers have no Spines, but are terminated by short loose Spikes of yellow Flowers, which are succeeded by short Pods, containing 3 or 4 Kidney-shaped Seeds. It flowers in *June*, and the Seeds ripen in *August*.

All these Sorts of Broom are propagated by Seeds, which, if sown in Autumn, will succeed much better than if sown in Spring, and a Year will be thereby saved; as these Plants send out long stringy tough Roots, which run deep into the Ground, they do not bear transplanting well, especially if they are not removed young, therefore the best Way is to sow a few Seeds in those places where the Plants are designed to remain, and to pull up all except the most promising Plants as soon as they are past Danger; after this the Plants will require no other Culture, but to keep them clean from Weeds; but where this cannot be practised, the Seeds may be sown thin upon a Bed of light Earth, and when the Plants come up, they must be kept clean from Weeds till the following Autumn, when the Plants should be carefully taken up and transplanted where they are designed to remain. They are all very hardy Plants except the 4th and 10th Sorts, which must have a warm sheltered Situation and dry Soil, otherwise they will not live through the Winter, but the others will grow in almost any Soil or Situation.

GENISTA SPINOSA, the Furz, Whins, or Gorse. See Ulex.

GENTIANA. Lin. Gen. Plant. 285. Tourn. Inst. R. H. 80. Gentian, or Fellwort; in French, Gentiane.

The Characters are,

It hath a permanent Empalement to the Flower; which is cut into five acute Segments. The Flower hath one Petal, which is tubulous, and cut into 5 Parts at the Top which are flat. It hath 5 Awl-shaped Stamens, shorter than the Petal, terminated by single Summits. In the Center is situated an oblong cylindrical Germen, having no Style, but is crowned by two oval Stigmas. The Germen becomes an oblong taper-pointed Capsule with one Cell, containing many small Seeds fastened to the Valves of the Capsule.

The Species are,

1. GENTIANA corollis quinquefidis rotatis verticillatis, calycibus spathaceis. Hall. Helv. 479. Gentian with quinquefid Wheel-shaped Petals growing in Whorls, and Hood-like Empalements. This is the *Gentiana major lutea*. C. B. P. 187. Greater yellow Gentian.

2. GENTIANA corollis quinquefidis campanulatis oppositis pedunculis foliis linearibus. Lin. Sp. Plant. 228. Gentian with Bell-shaped quinquefid Petals placed opposite upon Foot Stalks, and very narrow Leaves. This is the *Gentiana angustifolia autumnalis major*. C. B. P. 188. Greater narrow-leaved autumnal Gentian.

3. GENTIANA corollis quinquefidis campanulatis oppositis sessilibus, foliis amplexicaulibus. Lin. Sp. Plant. 227. Gentian with Bell-shaped quinquefid Petals, sitting close to the Stalk, and opposite, and Leaves embracing the Stalk. This is the *Gentiana Asclepiadis folio*. C. B. P. 187. Gentian with a Swallow-wort Leaf.

4. GENTIANA corollâ quinquefida campanulatâ, caulem excedente. Lin. Sp. Plant. 228. Gentian with a Bell-shaped

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shaped quinquefid Petal above the Stalk. This is the *Gentiana Alpina latifolia, magna flore*. C. B. P. 187. Broad leaved Alpine Gentian with a large Flower, commonly called *Gentianella*.

5. *GENTIANA corollis quinquefidis infundibuliformibus, ramis unifloris alternis*. Lin. Sp. Plant. 229. Gentian with Funnel-shaped quinquefid Petals, and alternate Branches having one Flower. This is the *Gentiana annua, foliis Centaurii minoris*. Tourn. Infl. 81. Annual Gentian with lesser Centaury Leaves.

6. *GENTIANA corollis quadrifidis imberbibus verticillatis sessilibus*. Lin. Sp. Plant. 231. Gentian with quadrifid Petals without Beards, growing in Whorls close to the Stalks. This is the *Gentiana cruciata*. C. B. P. 188. Crosswort Gentian.

7. *GENTIANA corollis quadrifidis margine ciliatis*. Lin. Sp. Plant. 231. Gentian with a four-pointed Petal, whose Border is hairy. This is the *Gentianella cerulea oris pilosis*. C. B. P. 188. Blue Gentian with hairy Brims.

8. *GENTIANA corollis quinquefidis hypocrateriformibus, calycibus inflatis plicatis*. Lin. Sp. Plant. 229. Gentian with Salver-shaped quinquefid Petals, and swollen plaited Empalements. *Gentiana utriculis ventricosiss*. C. B. P. 188. Gentian with a ventricose Tube.

9. *GENTIANA corollis quinquefidis infundibuliformibus, caule dichotomo*. Lin. Sp. Plant. 229. Gentian with a Funnel-shaped five-pointed Petal, and a dichotomous Stalk. *Centaurium minus*. C. B. P. Lesser Centaury.

10. *GENTIANA corollis octofidis, foliis perfoliatis*. Lin. Sp. Pl. 232. Gentian with an eight-pointed Petal, and thorough-wax Leaves. This is the *Centaurium luteum perfoliatum*. C. B. P. 278. Yellow perfoliate Centaury.

11. *GENTIANA corollis quinquefidis infundibuliformibus, floribus alternis sessilibus*. Lin. Sp. Plant. 230. Gentian with Funnel-shaped five-pointed Petals, Flowers growing alternate, and sitting close to the Stalks. This is the *Centaurium minus spicatum album*. C. B. P. 278. Lesser Centaury with a white spiked Flower.

12. *GENTIANA corollis quinquefidis infundibuliformibus, pedunculis longissimis*. Gentian with a Funnel-shaped five pointed Petal, and a very long Foot Stalk. *Centaurium minus maritimum amplo flore ceruleo*. Plun. Cat. 3. Lesser maritime Centaury with a large blue Flower.

The first Sort is the common Gentian of the Shops, whose Root is one of the principal Ingredients in Bitters.

This Plant hath a large thick Root of a yellowish brown Colour, and a very bitter Taste, the lower Leaves are of an oblong oval Shape, a little pointed at the End, stiff, of a yellowish green, and have 5 large Veins on the Back of each. The Stalk rises 3 or 4 Feet, and is garnished with Leaves, growing by Pairs at each Joint, almost embracing the Stalk at their Base; these are of the same Form with the lower, but diminish gradually in their Size to the Top. The Flowers come out in Whorls at the Joints, toward the upper Part of the Stalks, standing on short Foot Stalks, whose Origin is from the Wings of the Leaves; these are of a pale yellow, and have one Petal, which is divided almost to the Bottom, having an oblong cylindrical Germen,

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which afterward swells to an oblong taper Capsule, bifid at the Point, and opens in two Cells, filled with small Seeds.

It grows naturally in the Pastures in Switzerland, and in the mountainous Parts of Germany, from whence the Roots are brought to England for medicinal Use; there is a compound Water, and an Extra& made of them.

But a few Years ago, there was a Mixture of Henbane Roots brought over with Gentian, which was unhappily used, and occasioned great Disorders in the Persons to whom it was administered; great Enquiry was then made to find out what that Root could be, some suspecting it to be the Root of Deadly Nightshade, and others believing it to be some of the poisonous umbelliferous Roots, but on comparing it with some dried Roots of the Henbane, I found they were the same. We have likewise an Account of the noxious Quality of these Roots, printed in the *Synopsis Stirpium Hibernicarum*, which was communicated to the Author by Dr. Thomas Molyneaux, Physician to the State; it was as follows:

The Dean of Clonsfert was making some Alterations in his Garden, and, looking over his Workmen, he observed them to dig up many Roots, which he took for Skirrets, and therefore ordered some of them to be carried in and dressed for Dinner, which was accordingly done, but all those who eat of them were in a short Time seized with Dizziness in their Head, Sickness at the Stomach, attended with an unusual Heat and Dri-ness in their Throats, and two, who had eaten a larger Share than the rest, lost the Use of their Reason, and became delirious, which continued for some Days; and as it appeared evident these Disorders were occasioned by the Roots, the Dean caused some of them to be planted, that he might be assured what the Plant was whose Roots had this bad Quality; and in the Spring, when they put out their Leaves, they proved to be the Henbane, which has been noticed by old Writers to be possessed of these Qualities. As the Disorders which were occasioned by these supposed Gentian Roots, were nearly the same, as is above related, I thought it might be of Use to insert it here, to caution others against eating Roots they are unacquainted with.

This Plant delights in a light loamy Soil and a shady Situation, where it will thrive much better than in a light dry Soil, or in an open Exposure. It is propagated by Seeds, which should be sown in Pots soon after it is ripe, for if it is kept till Spring, it will not succeed; these Pots should be placed in a shady Situation, and kept clean from Weeds. In Spring the Plants will appear, when they must be duly watered in dry Weather, and kept clean from Weeds till the following Autumn, then they should be carefully shaken out of the Pots, so as not to break or injure their Roots, and a shady Border of loamy Earth, should be well dug and prepared to receive them, into which they should be planted at about six Inches Distance each Way, observing to let the Top of the Roots be a little below the Surface of the Ground, then press the Earth close to the Roots; after this they will require no farther Care but to keep them constantly clean from Weeds, and if the following Spring should prove dry, they should be duly watered, which will greatly forward their Growth. In this Border the Plants may stand two Years, by which

Time

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Time they will be fit to transplant where they are designed to remain; therefore in Autumn, so soon as their Leaves decay, they may be removed; but as the Roots of these Plants run deep into the Ground, like Carrots, there must be great Care taken in digging them up, not to cut or break their Roots, for that will greatly weaken, if it does not kill them. After the Plants are well fixed in their Places, they require no other Culture, but to dig the Ground about them early in the Spring, before they begin to shoot, and in Summer to keep them clean from Weeds. The Roots of these Plants will continue many Years, but the Stalks decay every Autumn; the same Roots do not flower two Years together, nor seldom oftener than every third Year, but when they flower strong, they make a fine Appearance; and as these delight in shady moist Ground, where but few ornamental Plants will thrive, so they should not be wanting in good Gardens.

The 2d Sort grows naturally in moist Pastures in many Parts of *England*, but particularly in the North; this rises with an upright Stalk, about a Foot high, garnished with smooth Leaves, an Inch and a Half long, and less than a Quarter of an Inch broad; they are placed opposite, and have no Foot Stalks. The Flowers are produced on the Top of the Stalk, three or four in Number, standing upon Foot Stalks, alternately above each other; they are large, Bell-shaped, and divided into five Points at their Brim, and are of a deep blue Colour, so make a fine Appearance; these come out the latter End of *July* in the warm Parts of *England*, but in the North they are a full Month later.

It may be propagated by Seeds as the first Sort, and the Plants may be treated in the same Way; but as this Sort doth not shoot its Roots deep into the Ground, it may be transplanted with less Hazard; however, if these are removed with a Ball of Earth to their Roots, they will not feel their Removal so much as when the Earth is all taken from them. This Sort should be planted in a strong moist loamy Soil, in which the Plants will thrive and flower annually, but in a warm dry Soil they will not thrive or flower.

The 3d Sort grows naturally upon the *Helvetian* Mountains; this rises with an upright Stalk, near a Foot high, garnished with smooth Leaves, about two Inches long, and three Quarters of an Inch broad at their Base, where they embrace the Stalk, but they end in acute Points; they are placed opposite, are of a fine green, and are diminished in their Size as they are nearer the Top; they have 5 longitudinal Veins, which join at both Ends, but diverge from each other in the Middle. The Flowers come out by Pairs opposite, from the Bottoms of the Leaves, standing on short Foot Stalks; they are pretty large, Bell-shaped, and of a fine blue Colour, so make a fine Appearance when they are open. This Sort flowers in *June* and *July*.

It may be propagated by Seeds as the first Sort, and the Plants may be treated in the same Way, but they must have a moist loamy Soil, otherwise they will not thrive. It may also be propagated by Offsets, which may be divided from the Roots; these should be taken off in Autumn, which is the best Season for removing all these Sorts of Plants, but these should not be removed, or parted oftener than every third Year, where they are expected to produce strong Flowers.

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The 4th Sort grows naturally on the *Alps* and *Helvetian* Mountains, but has been long cultivated in most of the curious Gardens in *Europe*; this is commonly known by the Title of *Gentianella*. It is a low Plant, the Stalks seldom growing more than three or four Inches high; they are garnished with smooth Leaves placed opposite, which are near two Inches long, and Half an Inch broad, sitting close to the Stalk. The Flowers grow erect on the Top of the Stalk, so stand quite above them; these are often single, but sometimes, when the Plants are strong, there will be four or five at the End of each Stalk; they are large, Bell-shaped, of a deep Azure blue, and the finest of that Colour of any Flower yet known. It usually flowers in *May*, but sometimes they flower again in Autumn.

This is commonly propagated by parting the Roots, in the same Manner as before directed for the third Sort, but these must not be often transplanted, or parted, if they are wanted to flower strong; this Sort should have a soft loamy Soil, and a shady Situation, where the Plants will thrive and flower well every Year.

It may also be propagated by Seeds, which, in a good Soil, the Plants will produce in Plenty; these should be sown in Autumn, as before directed for the first Sort, and if the Plants are planted in a good Soil, they will be strong enough to flower the second Year after they come up; these seedling Plants will flower much stronger than those propagated by Offsets.

The 5th and 8th Sorts are low annual Plants, which grow naturally upon the *Alps*, and are very rarely cultivated in Gardens. The 5th seldom rises more than two Inches high, branching out from the Root into several slender Stalks, garnished with very small Leaves placed by Pairs, and each Stalk is terminated by one small blue Flower standing erect. The 8th Sort grows about four Inches high, with a single upright Stalk, of a purple Colour. The Leaves at the Root are oval, but those upon the Stalk are narrow, and stand opposite. The Stalk is terminated by one blue Flower, with a large bellied Empalement, which is plaited, and the Petal of the Flower rises but little above the Empalement, so does not make much Appearance. After the Top Flower decays, there are frequently two smaller Flowers which come out from the Side of the Stalk, at the two upper Joints; these flower after each other, the upper one coming first, so that there is a Succession of Flowers till Autumn.

As these Plants usually grow upon moist spongy Ground, it is very difficult to cultivate them in Gardens, for unless they have a Soil approaching near to that in which they naturally grow they will not thrive; the only Method to obtain them is, either to sow their Seeds in Pots, or upon a moist boggy Ground in Autumn, but it must be in the Shade; and when the Plants come up, they may be thinned, and the Surface of the Ground about them, covered with Moss, which should be constantly kept moist; with this Management I have seen the Plants thrive and flower very well.

The 6th Sort is a perennial Plant, which grows naturally upon the *Apennines*, and the *Helvetian* Mountains; this rises with an upright Stalk, about six Inches high, garnished with smooth Spear-shaped Leaves, about two Inches long, and one broad in the Middle, sitting close

close to the Stalk; they are placed opposite, and each Pair of Leaves cross one another, from whence it is called Crosswort Gentian. The Flowers are produced in Whorls round the Stalks at the upper Joints, sitting very close to the Stalks, and at the Top there is a large Cluster growing in the same Form; these are of a light blue Colour, and appear in May. This may be propagated by Seeds, or Offsets, as the 3d and 4th Sorts, and the Plants must be treated in the same Way.

The 7th Sort grows naturally upon the Alps, and other mountainous Parts of Europe; this is a low perennial Plant, whose Stalks are very slender, and rarely rise more than three or four Inches high, garnished with small, narrow, acute-pointed Leaves, placed in Pairs; each Stalk is terminated by one large blue Flower, which is hairy on the Inside at the Brim. This flowers in July and August; it may be propagated and treated in the same Manner as the 3d and 4th Sorts.

The 9th Sort is the Lesser Centaury of the Shops; this grows naturally upon dry Pastures in most Parts of England, where it rises in Height proportionable to the Goodness of the Soil, for in good Land it is frequently a Foot high, but in poor Soils not more than three or four Inches. It is an annual Plant, with upright branching Stalks, garnished with small Leaves placed by Pairs. The Flowers grow in Form of an Umbel at the Top, and are of a bright purple Colour; they come out in July, and the Seeds ripen in Autumn. This Plant cannot be cultivated in Gardens.

The 10th Sort grows naturally on chalky Grounds in England. It is an annual Plant, rising with an upright Stalk, a Foot high, garnished with oval pointed Leaves, whose Base surrounds the Stalk; they grow by Pairs opposite, and are of a gray Colour; the Stalks and Leaves are very smooth. The Flowers grow in Form of an Umbel on the Top of the Stalk; they are of a bright yellow Colour, and are cut into 8 Parts at the Top. These appear in July, and the Seeds ripen in Autumn.

The 11th Sort is an annual Plant, which grows naturally in the South of France and in Italy; this rises with an upright Stalk, about a Foot high, sending out several Branches toward the Top, garnished by small Leaves placed opposite. The Flowers are produced from the Side, and at the Top of the Stalk, in Form of loose irregular Umbels; they are white, and about the Size of those of the common Centaury.

The 12th Sort grows naturally in the West-Indies, where it was discovered by Father Plumier, and the late Dr. Houffoun found it growing in Plenty at La Vera Cruz, in low moist Places where the Water stagnates, but at a remote Distance from the Sea. The Seeds of this Plant he sent to England, which succeeded in the Chelsea Garden; it rises with an upright branching Stalk, near 2 Feet high, garnished with oblong, smooth, acute, pointed Leaves, placed opposite; the upper Part of the Stalk divides into 6 or 7 long naked Foot Stalks, each sustaining one large blue Flower, divided into 5 Segments at the Brim. The Flowers are succeeded by oblong Capsules with one Cell, filled with small Seeds.

This is propagated by Seeds, which must be sown on a hot Bed, and the Plants afterward treated as other annual Plants from warm Countries, being too tender

to thrive in the open Air in England. If the Seeds of this Plant are sown in Autumn, in Pots placed in the Tan Bed of the Stove, they will succeed better than when they are sown in the Spring, and the Plants will flower early, so good Seeds may be obtained.

GENTIANELLA. See Gentiana.

GERANIUM. Lin. Gen. Plant. 346. Tourn. Inst. R. H. 266. Tab. 142. [takes its Name from *geranos*, Gr. a Crane, or Stork, because its Fruit resembles the Bill of a Crane.] Crane's-bill; in French, *Bec de Grue*.

The Characters are,

The Flower hath a permanent Empalement, composed of 5 small oval Leaves. The Flower hath 5 Petals, which are oval, or Heart-shaped, spreading open; these are in some Species equal, and, in others, the upper two are much larger than the three lower. It hath 10 Stamina, which are alternately longer, but are shorter than the Petals, and are terminated by oblong Summits. In the Bottom of the Flower is situated a five-cornered Germen, supporting an Awl-shaped Style, longer than the Stamina, which is permanent, crowned by 5 reflexed Stigmas. The Flower is succeeded by 5 Seeds, each being wrapped up in the Husk of the Beak, which is extended the Length of the Style, where they are twisted together at the Point, so as to form the Resemblance of a Stork's Beak.

The Species are,

1. GERANIUM *pedunculis bifloris, foliis peltatis multipartitis rugosis, pinnato-laciniatis acutis*. Crane's-bill with two Flowers on each Foot Stalk, and rough Target-shaped Leaves, cut into many Parts, whose Segments are acute and Wing-shaped. This is the *Geranium batrachoides*, *Gratia Dei Germanorum*. C. B. P. Crane's-bill with a Crowfoot Leaf, and large blue Flowers.

2. GERANIUM *pedunculis bifloris, calycibus inflatis, pistillo longissimo*. Hort. Cliff. 343. Crane's-bill with two Flowers on each Foot Stalk, swollen Empalements, and a very long Pointal. This is the *Geranium batrachoides, longius radiculatum, odoratum*. J. B. Long-rooted sweet-smelling Crane's-bill, with a Crowfoot Leaf.

3. GERANIUM *pedunculis unifloris, foliis quinquepartitis trifidis orbiculatis*. Lin. Sp. Plant. 685. Crane's-bill with one Flower on each Foot Stalk, and orbicular Leaves, which are trifid, and divided into five Parts. This is the *Geranium sanguineum, maximo flore*. H. Ox. Bloody Crane's-bill with a large Flower.

4. GERANIUM *pedunculis unifloris, foliis quinquepartitis laciniis obtusis brevibus, caulibus decumbentibus*. Crane's-bill with one Flower upon each Foot Stalk, Leaves divided into five Parts, whose Segments are short and blunt, and declining Stalks. This is the *Geranium haematodes Lancastrense, flore eleganter striato*. Raii Hist. Bloody Crane's-bill with a variegated Flower.

5. GERANIUM *pedunculis bifloris, foliis caulinis trilobis integris serratis, summis subsessilibus*. Hort. Cliff. 343. Crane's-bill with two Flowers on each Foot Stalk, and the Leaves upon the Stalks, having 3 entire sawed Lobes, the upper Leaves sitting close to the Stalk. This is the *Geranium nodosum*. Clus. Hist. Knotty Crane's-bill.

6. GERANIUM *pedunculis bifloris, folisque alternis, calycibus subaristatis, caule erecto*. Lin. Sp. Plant. 681. Crane's-bill with two Flowers on each Foot Stalk, alternate Leaves, bearded Empalements, and an erect Stalk.

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This is the *Geranium phaeum* sive *fuscum*, *petalis reflexis*, *folio non maculoso*. H. L. Brown Crane's-bill with reflexed Petals, and Leaves not spotted.

7. *GERANIUM pedunculis bifloris, foliis quinquelobatis incisis, petalis reflexis*. Crane's bill with two Flowers upon each Foot Stalk, Leaves divided into five Lobes, which are cut, and the Petals of the Flowers reflexed. This is the *Geranium phaeum* sive *fuscum*, *petalis rectis seu planis, folio maculato*. H. L. Brown Crane's-bill with plain Petals, and spotted Leaves.

8. *GERANIUM pedunculis bifloris, foliis caulinis trilobis obtusè-crenatis, infernè bifutis*. Crane's-bill with two Flowers upon each Foot Stalk, the Leaves on the Stalks having three Lobes, which are bluntly crenated, and hairy on the under Side. This is the *Geranium Romanum, versicolor sive striatum*. Park. Par. Roman Crane's-bill with striped Flowers.

9. *GERANIUM pedunculis bifloris, foliis peltatis incisoferratis, caule erecto*. Flor. Lapp. 266. Crane's-bill with two Flowers on each Foot Stalk, Target-shaped Leaves, which are cut in acute Points, and an erect Stalk. This is the *Geranium batrachioides montanum nostras*. Ger. Mountain Crane's-bill with a Crowfoot Leaf.

10. *GERANIUM pedunculis bifloris, foliisque oppositis, petalis integris, calycibus brevioribus*. Crane's-bill with two Flowers on each Foot Stalk, and Leaves placed opposite on the Branches; the Petals of the Flower entire, and shorter Empalements. This is the *Geranium Orientale columbinum, flore maximo, asphodeli radice*. T. Cor. Oriental Dove's-foot Crane's-bill with an Asphodel Root, and large Flowers.

11. *GERANIUM pedunculis bifloris, foliisque oppositis, caule erecto ramoso, petalis bifidis*. Crane's-bill with two Flowers on each Foot Stalk, the Leaves on the Branches placed opposite, a branching upright Stalk, and bifid Petals to the Flower. *Geranium Columbinum perenne Pyrenaicum maximum*. Tourn. Inst. Greatest perennial Dove's-foot Crane's-bill of the Pyrennees.

12. *GERANIUM pedunculis longissimis multifloris, calycibus aristatis, foliis bipinnatis*. Crane's-bill with very long Foot Stalks sustaining many Flowers, bearded Empalements, and double Wing-pointed Leaves. *Geranium Alpinum Coriandri folio, longius radicatam, flore majore purpureo*. Michel. Alpine Crane's-bill with a Coriander Leaf, a long Root, and a larger purple Flower.

13. *GERANIUM pedunculis bifloris, foliis multipartitis sericeis, pedunculis longioribus, petalis integris*. Crane's-bill with two Flowers on each Foot Stalk, silken Leaves which are divided into many Parts, longer Foot Stalks, and the Petals of the Flower entire. *Geranium argenteum Alpinum*. C. B. P. Silvery Alpine Crane's-bill.

14. *GERANIUM pedunculis bifloris, caule dichotomo erecto, foliis quinquepartitis incisis summis sessilibus*. Flor. Virg. 78. Crane's-bill with two Flowers on each Foot Stalk, upright Stalks divided by Pairs, and cut Leaves divided into five Parts, the upper sitting close to the Stalk. This is the *Geranium batrachioides Americanum maculatum, floribus obsolete cæruleis*. Hort. Elsb. 158. American spotted Crane's-bill with obsolete blue Flowers.

15. *GERANIUM pedunculis bifloris, foliis quinquelobatis crenatis, petalis integris caule ramoso*. Crane's-bill with two Flowers on each Foot Stalk, crenated Leaves with five Lobes, entire Petals to the Flower, and a branching

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Stalk. This is the *Geranium annuum minus Bobemicum, purpureo-violaceum*. Mor. Hist. 2. 511. Lesser annual Crane's-bill of Bobemia, with a purple violet Flower.

16. *GERANIUM pedunculis subunifloris, foliis quinquepartitis acutis, foliolis pinnatifidis*. Lin. Sp. Plant. 683. Crane's-bill with one Flower on a Foot Stalk, Leaves divided into five acute Parts, and the smaller Leaves Wing-pointed.

17. *GERANIUM pedunculis multifloris, calycibus pentaphyllis, floribus pentandris foliis pinnatis incisis obtusis*. Hort. Cliff. 334. Crane's-bill with many Flowers on each Foot Stalk, having five leaved Empalements, five Stamina to the Flowers, and cut winged obtuse Leaves. This is the *Geranium cicutæ folio, moschatum*. C. B. P. Musk-d Crane's-bill, frequently called *Muscovy*.

18. *GERANIUM pedunculis bifloris, calycibus pentaphyllis, floribus pentandris, foliis pinnato-incisis crenatis*. Crane's-bill with two Flowers on a Foot Stalk, five leaved Empalements, five Stamina to the Flower, and Leaves cut like Wings, which are crenated. This is the *Geranium latifolium annuum, cæruleo flore, acu longissimâ*. H. Ox. Broad leaved annual Crane's-bill with a blue Flower, and a very long Beak.

19. *GERANIUM pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis pinnatis acutis sinuatis*. Lin. Sp. Plant. 680. Crane's-bill with many Flowers on each Foot Stalk, having five leaved Empalements, five Stamina to the Flowers, and acute sinuated winged Leaves. This is the *Geranium Cicutæ folio, acu longissimâ*. C. B. P. 319. Crane's-bill with a Hemlock Leaf, and very long Beaks to the Seed.

20. *GERANIUM pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis bipinnatis multifidis, caule erecto*. Crane's-bill with many Flowers on each Foot Stalk, having five leaved Empalements, Flowers with five Stamina, and many pointed winged Leaves. This is the *Geranium Cicutæ folio viscosum erectum, acu longissimâ*. Jussieu. Erect viscid Crane's-bill with a Hemlock Leaf, and very long Beaks to the Seed.

21. *GERANIUM calycibus monophyllis, foliis cuculatis dentatis*. H. C. Crane's-bill with an Empalement of one Leaf, and indented hooded Leaves. This is the *Geranium Africanum arborescens, ibisci folio rotundo, carlinæ odore*. H. L. African Tree Crane's-bill with a round Marshmallow Leaf, and Smell of the Carline Thistle.

22. *GERANIUM calycibus monophyllis, foliis cuculatis angulosis, acutè dentatis*. Crane's-bill with a one leaved Empalement, and angular hooded Leaves, which are sharply indented. This is the *Geranium Africanum arborescens, ibisci folio anguloso, floribus amplis purpureis*. Phil. Transf. 388. African Tree Crane's-bill with an angular Marshmallow Leaf, and large purple Flowers.

23. *GERANIUM calycibus monophyllis, foliis cordato-orbiculatis incisis zonâ notatis*. Hort. Ups. Crane's-bill with a one leaved Empalement, and round Heart-shaped Leaves, cut, and marked with a Circle. This is the *Geranium Africanum arborescens, alchimillæ bifido folio, floribus rubicundis*. Com. Præl. African Tree Crane's-bill with an hairy Ladies Mantle Leaf, and red Flowers.

24. *GERANIUM calycibus monophyllis, foliis orbiculato-reniformibus tomentosis crenatis integrisculis*. Hort. Ups. 195. Crane's-bill with one leaved Empalements, and round Kidney-shaped Leaves, which are woolly, crenated,

ted, and entire. This is the *Geranium Africanum arborescens*, *malvæ folio plano lucido, flore elegantissimè kermesino*. Boerb. Ind. African Tree Crane's-bill with a plain shining Mallow Leaf, and an elegant scarlet Flower.

25. *GERANIUM calycibus monophyllis, foliis lobatis undatis villosis*. Hort. Upsal. 196. Crane's-bill with Empalements of one Leaf, and Leaves divided into Lobes, which are waved and hairy. This is the *Geranium Africanum frutescens, malvæ folio odorato laciniato*. H. L. African shrubby Crane's-bill with a jagged sweet smelling Mallow Leaf, commonly called Rose Geranium.

26. *GERANIUM calycibus monophyllis, foliis adscendentibus lobatis pubescentibus*. Hort. Upsal. 196. Crane's-bill with one leaved Empalements, and ascending Leaves, which have Lobes, and are covered with soft Hairs. This is the *Geranium Africanum frutescens, malvæ folio laciniato, odorato instar melissæ, flore purpurascens*. Boerb. Ind. African shrubby Crane's-bill with a jagged Mallow Leaf, smelling like Balm, and a purplish Flower.

27. *GERANIUM calycibus monophyllis, corollis papilionaceis, vexillo dipetalo maximo, foliis angulatis*. Hort. Cliff. 345. Crane's-bill with Empalements of one Leaf, a Butterfly Flower, with a large Standard of two Petals, and angular Leaves. This is the *Geranium Africanum arborescens, malvæ folio mucronato, petalis florum inferioribus vix conspicuis*. Phil. Transf. African Tree Crane's-bill, with a pointed Mallow Leaf, and the under Petals of the Flower scarce discernable.

28. *GERANIUM calycibus monophyllis, foliis glabris subovatis carnosis crenatis*. Hort. Cliff. 345. Crane's-bill with Empalements of one Leaf, and smooth oval fleshy Leaves, which are crenate. This is the *Geranium Africanum frutescens, folio crasso & glauco, acetoso sapore*. Com. Præl. African shrubby Crane's-bill with a thick glaucous Leaf, and an acid Taste like Sorrel.

29. *GERANIUM calycibus monophyllis, petalis lineari-bus, caule carnosio nodoso, foliis duplicato-pinnatifidis*. Lin. Vir. 67. Crane's-bill with one leaved Empalements, very narrow Petals, a fleshy knotted Stalk, and Leaves doubly Wing-pointed. This is the *Geranium Africanum frutescens, chelidonii folio, petalis florum angustis albidis, carnosio caudice*. Phil. Transf. *Geranium Africanum, folio alceæ, flore albo*. Boerb. Ind. alt. African shrubby Crane's-bill with a Leaf like the Alcea, the Petals of the Flower white and narrow, and a fleshy Stalk.

30. *GERANIUM calycibus monophyllis, caule carnosio gibboso, foliis subpinnatis*. Lin. Sp. Plant. 677. Crane's-bill with one leaved Empalements, a fleshy gibbous Stalk, and winged Leaves. This is the *Geranium Africanum noctu olens, tuberosum & nodosum, aquilegiæ foliis*. H. L. African Crane's-bill, smelling sweet in the Night, with knotty tuberous Stalks, and Leaves like Columbine.

31. *GERANIUM calycibus monophyllis, foliis tripartitis incis, intermedia majore, pedunculis umbelliferis geminis, caule carnosæ*. Lin. Vir. 67. Crane's-bill with one leaved Empalements, Leaves cut into three Segments, the Middle one being the largest, double Foot Stalks with Flowers growing in Umbels, and a fleshy Stalk. This is the *Geranium Africanum, folio alceæ, flore occineo fulgidissimo*. Boerb. Ind. alt. African Crane's-bill with a Vervain Mallow Leaf, and a deep scarlet Flower.

32. *GERANIUM calycibus monophyllis, foliis quinquelobis integerrimis glabris peltatis*. Hort. Cliff. 345.

Crane's-bill with Empalements of one Leaf, and smooth Target-shaped Leaves, having five Lobes, which are entire. This is the *Geranium Africanum, foliis inferioribus asari, superioribus staphidisagria, maculatis, splendentibus, & acetoso sapore*. Com. Præl. African Crane's-bill with the under Leaves like Asarabacca, and the upper Leaves like Stavesacre, shining, spotted, and tasting like Sorrel.

33. *GERANIUM calycibus monophyllis, foliis orbiculatis palmatis incis, pilosis, caule herbaceo*. Lin. Vir. 67. Crane's-bill with Empalements of one Leaf, roundish Hand-shaped Leaves, divided and hairy, and an herbaceous Stalk. This is the *Geranium Africanum, alchimillæ hirsuto folio, floribus albidis*. H. L. African Crane's-bill with a hairy Ladies Mantle Leaf, and whitish Flowers.

34. *GERANIUM calycibus monophyllis, caule carnosio brevissimo, ramis longis, foliis cordatis*. Hort. Cliff. 345. Crane's-bill with Empalements of one Leaf, a very short fleshy Stalk, long Branches, and Heart-shaped Leaves. *Geranium Africanum, folio malvæ crasso molli odoratissimo, flosculo pentapetalo albo*. Boerb. African Crane's-bill with a thick, soft, sweet-smelling Mallow Leaf, and a small white Flower composed of five Leaves.

35. *GERANIUM calycibus monophyllis, foliis bipinnatis multifidis villosis, radice subrotundo*. Crane's-bill with Empalements of one Leaf, double hairy winged Leaves ending in many Points, and a roundish Root. This is the *Geranium Americanum, noctu olens, radice tuberosâ, triste*. Corn. H. Ox. American tuberous-rooted Crane's-bill, smelling sweet in the Night.

36. *GERANIUM Africanum tuberosum, anemone folio, incarnato flore*. Par. Bat. Tuberous-rooted African Crane's-bill with an Anemomy Leaf, and a pale Flesh-coloured Flower.

37. *GERANIUM Africanum noctu olens, radice tuberosâ, foliis Pastinacæ incanis lanuginosis latioribus, flore pallide flavescente*. H. L. B. Night smelling Crane's-bill with a tuberous Root, broad woolly hoary Parsnep Leaves, and a pale yellowish Flower.

38. *GERANIUM Æthiopicum, noctu olens, radice tuberosâ, foliis myrrhidis angustioribus*. Breyn. Cent. Night sweet smelling Æthiopian Crane's-bill with a tuberous Root, and narrow Cicely Leaves.

39. *GERANIUM calycibus monophyllis, tubis longissimis subfessilibus, radice subrotundâ, foliis lobatis*. Prod. Leyd. 352. Crane's-bill with Empalements of one Leaf, with very long Tubes sitting close to the Foot Stalk, a roundish Root, and Leaves having Lobes. This is the *Geranium Africanum, noctu olens, folio vitis hirsuto, tuberosum*. H. A. Night sweet smelling African Crane's-bill with a hairy Vine Leaf, and a tuberous Root.

40. *GERANIUM calycibus monophyllis, corollis papilionaceis, vexillo dipetalo, foliis bipinnatis, radice annuâ*. Crane's-bill with Empalements of one Leaf, a Butterfly Flower with a Standard of two Petals, doubly winged Leaves, and an annual Root. This is the *Geranium Africanum, folio coriandri, floribus incarnatis, minus*. H. L. Lesser African Crane's-bill with a Coriander Leaf, and a Flesh-coloured Flower.

41. *GERANIUM calycibus monophyllis, corollis papilionaceis, vexillo dipetalo, foliis bipinnatis, ramis nodosis suffrutescentibus*. Crane's-bill with Empalements of one

Leaf, a Butterfly Flower with a Standard of two Petals, double winged Leaves, and knotty shrubby Branches.

42. *GERANIUM calycibus monophyllis, foliis palmatis subrotundis crenatis, caulibus filiformibus procumbentibus.* Crane's-bill with Empalements of one Leaf, roundish Hand-shaped Leaves, which are crenated, and Thread-like trailing Stalks. *Geranium Africanum, uva crispae folio, floribus exiguis rubellis.* H. L. African Crane's-bill with a Gooseberry Leaf, and small reddish Flowers.

43. *GERANIUM calycibus monophyllis, foliis ovatis inaequaliter serratis planis.* Lin. Sp. Pl. 679. Crane's-bill with one leaved Empalements, and oval plain Leaves unequally sawed. This is the *Geranium frutescens, folio lato dentato, flore magno rubente.* Burm. Afr. Shrubby Crane's-bill with a broad indented Leaf, and large reddish Flower.

The 1st Sort grows naturally in moist Meadows in many Parts of England, but is frequently planted in Gardens for the Beauty of its large blue Flowers; of this there is a Variety with white, and another with variegated Flowers. It hath a perennial Root, which sends up many Stalks, which rise near three Feet high, and are garnished with Target-shaped Leaves, divided into six or seven Parts at each Joint; these are cut into several acute Segments, after the Manner of winged Leaves, ending in many Points. The Flowers are produced at the Top of the Stalks, each Foot Stalk sustaining two Flowers, whose Petals are large and equal; they are of a fine blue Colour, and appear in May and June.

The Varieties of this may be preserved by parting their Roots in Autumn; they may be planted in almost any Soil or Situation, and require no other Culture but to keep them clean from Weeds. They may also be propagated by Seeds, but by this Method they are apt to vary in the Colour of their Flowers. If the Seeds are permitted to scatter, the Plants will come up without Care.

The 2d Sort grows naturally in Germany and Switzerland; this hath a thick fleshy perennial Root, from which arise several branching Stalks, which grow about one Foot high, garnished with Leaves at each Joint, which are divided into five Lobes; these are divided at the Top into many short Segments, and are crenated on their Edges, they are of a light green, and smooth. The Flowers are produced at the End of the Branches, many growing together in a Bunch, but each short Foot Stalk sustains two Flowers, so it may have the Title given it by Linnaeus, though at the first Appearance it seems as a many flowered Foot Stalk, and strictly is so, because the naked Foot Stalk sustains the whole Bunch. The Flowers have swollen Empalements, resembling inflated Bladders. The Petals are pretty large, equal, and of a fine bright purple Colour, and the Stamina and Style are much longer than the Petals; the whole Plant, when rubbed, emits an agreeable Odour. This flowers about the same Time with the first Sort, and may be propagated and treated in the same Manner, the Plant being equally hardy.

The 3d Sort grows naturally in England; but is often admitted into Gardens; this hath pretty thick fleshy fibrous Roots, which grow to a large Head, from which arise many Stalks, garnished with Leaves divided into five Parts, or Lobes, which are again divided almost to

the Mid-rib. The Flowers stand upon long hairy Foot Stalks, which come out from the Side of the Stalk, each sustaining one Flower composed of five broad regular Petals, which are of a deep purple Colour. This Sort flowers in June and July; there are two Varieties mentioned of this Sort as distinct Species, one whose Stalks grow more erect, and the other hath Leaves more deeply divided, but the Plants which I have raised from Seeds of these do not come up the same as the Parent Plants, so they are only feminal Varieties.

This hath a perennial Root, which may be parted in Autumn, or it may be propagated by Seeds, and the Plants treated in the same Manner as the first.

The 4th Sort hath been supposed by some to be only a Variety of the third, but is undoubtedly, a distinct Species; for I have frequently raised the Plants from Seeds, which have always proved to be the same. The Stalks of this Plant are shorter than those of the third, and spread flat on the Ground; the Leaves are much less, and not so deeply divided, and the Flowers much smaller and of a pale Colour, marked with purple; it grows naturally in Lancashire and Westmoreland, where I saw it in Plenty. This may be propagated and treated in the same Manner as the others.

The 5th Sort is a perennial Plant, of smaller Growth than either of the former. It rises with branching Stalks about six Inches high, garnished with Leaves, having three pretty broad Lobes, which are undivided, and crenated on their Edges: Those on the lower Part of the Stalks are placed opposite, upon pretty long Foot Stalks; but the upper Leaves sit close to the Stalks, and are single. The Flowers are produced at the End of the Stalks, standing together upon two short Foot Stalks; they are of a dirty purple Colour, and appear in June. It grows naturally in France. This Sort may be propagated and treated as the first.

The 6th Sort grows naturally on the Alps and Helvetic Mountains, and is found in some Places in the North of England: This hath a perennial Root, from which arise several Stalks near a Foot high, garnished with Leaves, which are divided into five or six Lobes, and lacinated on their Edges; those which grow near the Root have long Foot Stalks; but those on the upper Part of the Stalk sit close; the Stalk branches out at the Top into three or four Divisions, each being terminated by two or three Foot Stalks sustaining two Flowers of a dark purple Colour, with erect Petals. This flowers in June, and may be propagated by Seeds or parting the Roots, as the first Sort.

The 7th Sort is very like the sixth, but the Leaves are larger, the Lobes shorter, broader, and not so much cut, and are marked with black; the Stalks rise higher, the Flowers are larger, and the Petals are reflexed. These Differences are permanent, so are sufficient to constitute a specific Difference between them. This may be propagated and treated in the same Manner as the first Sort. It grows naturally on the Alps.

The 8th Sort hath a perennial Root, which sends up many branching Stalks a Foot and a Half high, garnished with light green Leaves; those on the lower Part of the Stalk have five Lobes and stand upon long Foot Stalks; but those on the upper Part have but three Lobes, sit closer to the Stalks, and are sharply indented

on the Edges; the Flowers stand upon long slender Foot Stalks, each sustaining two Flowers composed of five obtuse Petals, deeply indented at the Top; they are of a dull white, with many purple Stripes running longitudinally thro' them. These appear in *June*; and in cool Seasons there will be a Succession of Flowers a great Part of *July*. This Sort is very hardy, so may be propagated by dividing the Roots, or from Seeds, in the same Manner as the first Sort.

The 9th Sort grows plentifully in the Meadows in *Lancashire* and *Westmoreland*; this hath a perennial Root, which sends out three or four upright Stalks, about nine Inches high, garnished with Leaves, having five Lobes, which are sawed on their Edges, they are placed opposite on the Stalks; those on the lower Part having pretty long Foot Stalks, but those on the upper Part sit closer to the Stalks. The Flowers are situated on the Top of the Stalks, standing upon short Foot Stalks, each sustaining two pretty large blue Flowers, with entire Petals. This flowers in *May* and *June*, and may be propagated and treated as the first Sort.

The 10th Sort was discovered by Dr. *Tournefort* in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*; this hath a perennial Root, from which arise a few weak Stalks about nine Inches long, garnished with Leaves which are round, and divided into five Lobes, indented at the Top, and placed opposite on the Stalks. The Flowers stand upon pretty long Foot Stalks, which come single from the Joints of the Stalks, each sustaining two purplish Flowers with entire Petals, having very short Empalements. It flowers in *June*, and may be propagated either from Seeds, or by parting the Roots as the first Sort, but the Plants require a drier Soil and a warmer Situation, for although in common Winters it will live in the open Air, yet in severe Frost these Plants are sometimes killed, especially when planted in moist cold Land.

The 11th Sort grows naturally on the *Pyrenees*; this hath a perennial Root, from which arise many branching Stalks a Foot and a Half high, garnished with round Leaves, divided into many obtuse Segments at the Top, and placed opposite by Pairs. The Flowers are produced by Pairs on short Foot Stalks, which come out at the Divisions on the Sides, and at the Top of the Stalks; they are in some of a pale purple Colour, and in others white. The Petals of the Flowers are bifid, like those of the common Dove's foot Crane's-bill, to which the whole Plant bears some Resemblance, but the Stalks are erect, the Leaves and Flowers much larger, and the Root is perennial; this will propagate itself by its scattered Seeds where it has once got Possession, and will thrive in any Soil or Situation.

The 12th Sort grows naturally upon the *Alps*. The Seeds were sent me by Sig. *Michell*, of *Florence*; this hath a perennial Root, which runs very deep into the Ground. The lower Leaves of the Plant have very long Foot Stalks, they are doubly winged and smooth. The Stalks rise a Foot and a Half high, which are garnished with Leaves of the same Form as the lower, but are smaller, and stand opposite. The Flowers grow many together upon very long Foot Stalks; they are purple, and have Awns to the Segments of the Empalement. This flowers in *June*, but has never ripened Seeds

in *England*. The Plant is hardy, and lives in the open Air, but as the Root puts out no Offsets, nor perfects Seeds here, we have not been able to propagate it.

The 13th Sort grows naturally on the *Alps*; this hath a very thick perennial Root, from which come out roundish Leaves, divided into many Parts, standing upon pretty long Foot Stalks; they are very silvery, and shining like Silk. The Flower Stalks rise about four or five Inches high, garnished with one or two small Leaves, like those below, which sit close to the Stalk. The Stalks are terminated by two pretty large pale Flowers, whose Petals are entire, and spread open flat. It flowers in *June*, but rarely ripens Seeds here; it may be propagated by parting the Roots in the same Manner as the first, and must have a shady Situation.

The 14th Sort grows naturally in *North America*, from whence the Seeds were sent to *England*; this hath a perennial Root, from which arise several Stalks about one Foot high, which divide by Pairs, and from the Middle of the Divisions come out the Foot Stalks of the Flowers, which are pretty long and naked, each sustaining two pale purple Flowers with entire Petals. The Leaves are divided into five Parts, which are cut on their Edges, and placed opposite, the lower having pretty long Foot Stalks, but the upper sit close to the Stalks. It flowers in *June*, and frequently ripens Seeds, from which the Plant may be propagated; it thrives very well in the open Air, and requires no other Culture but to keep it clean from Weeds.

The 15th Sort grows naturally in *Bohemia*; this is an annual Plant, which sends out many Stalks, dividing into several Parts, which are garnished with Leaves divided into five Lobes, crenated on their Edges; they stand upon long Foot Stalks, and are for the most Part opposite. The Flowers stand by Pairs upon pretty long slender Foot Stalks, which come out from the Side of the Stalk; they are of a fine blue Colour, and are succeeded by Seeds, whose Capsules and Beaks are black. It flowers most Part of Summer, and the Seeds ripen soon after, which, if permitted to scatter, there will be a Supply of Plants, which want no other Care but to keep them clean from Weeds.

The 16th Sort grows naturally in *Siberia*. The Seeds of this Plant were sent me by Sir *Charles Linnaeus*, Professor of Botany, at *Upsal*; this Sort hath a perennial Root. The Leaves are divided into five acute Lobes, which are cut into many sharp Wing-like Segments on their Edges; they are placed opposite, and have long slender Foot Stalks. The Foot Stalks of the Flower come out from the Wings of the Stalk; they are pretty long, slender, and each sustain one pale purplish Flower. This Sort flowers in *June*, and perfects its Seeds very well, so may be easily propagated; it will grow on any Soil, or in any Situation.

The 17th Sort is an annual Plant, which is sometimes found growing naturally in *England*, but is frequently preserved in Gardens for the musky Odour of the Leaves, which in dry Weather is very strong. The Leaves are irregularly winged, the Lobes grow alternate, and are cut into many obtuse Segments on their Edges. The Stalks branch into many Divisions, and frequently decline to the Ground. The Flowers are produced in Umbels on long Foot Stalks, which arise from the Wings of

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of the Stalks; they are small, blue, and have but 5 Stamina in each, their Empalements are composed of 5 Leaves. It flowers in *May, June, and July*, and the Seeds ripen soon after, which, if permitted to scatter, there will be a Supply of Plants without Care, which will require no Culture, but to keep them clean from Weeds, and thin them where too close; it will thrive in any Soil, or Situation.

The 18th Sort grows naturally in *Crete*; this is an annual Plant with very broad Leaves, which are cut on their Sides regularly, in Form of winged Leaves, and are crenated on their Borders. The Flowers are produced on pretty long Foot Stalks, which come out from the Wings of the Stalk; they have 5 leaved Empalements, and are composed of 5 entire blue Petals; these are succeeded by the largest and longest Beaks of any Species of this Genus yet known. It flowers in *June and July*; ripens Seeds very well, and if they are permitted to scatter, the Plants will come up without Care; or they may be sown in Spring, where they are designed to remain, and require no Culture but to thin them where too close, and keep them clean from Weeds.

The 19th Sort grows naturally in *Germany and Italy*; this is an annual Plant, which hath several prostrate Stalks near a Foot long, garnished with winged Leaves, cut into several acute Parts, placed by Pairs opposite. The Flowers come out from the Wings of the Stalk, upon Foot Stalks about 3 Inches long; some of these sustain many Flowers, but others have no more than two; they are of a pale blue Colour, and are succeeded by very long Beaks, but not so long, or large as those of the former Sort, but the Seeds of this are frequently used for Hygrometers, to shew the Moisture of the Air; if the Seeds are permitted to scatter, the Plants will come up and thrive without any other Care than to keep them clear from Weeds, and the Plants which come up in Autumn, will flower early in *May*, but those which are sown in Spring seldom flower till *July*.

The Seeds of the 20th Sort were sent to the *Chelsea Garden* by Dr. *Jussieu*, Professor of Botany, at *Paris*; this is an annual Plant, which hath upright Stalks near two Feet high, garnished with double winged Leaves, ending in many Points; these are very viscous, and stand opposite. The Flowers are produced on long naked Foot Stalks, standing many together upon each; they are of a pale blue Colour, and have but five Stamina; their Empalements are composed of five Leaves, which end with Awns. It flowers in *May, June, and July*, according to the Times when the Seeds are sown, and the Seeds ripen a Month after; this requires no other Culture than the two former Sorts.

There are several other Sorts of annual *Geraniums*, some of which grow naturally in *England*, and are troublesome Weeds in a Garden, others grow naturally in *France, Spain, Italy, and Germany*, and are preserved in Botanick Gardens for the Sake of Variety, but as they are Plants of little Beauty, they are rarely admitted into other Gardens, therefore I shall not trouble the Reader with an Enumeration of the Species, which would swell this Article too much, so I shall next treat of the *African Crane's-bills*, which are preserved in most of the curious Gardens, where there is Conveniency to screen them from the Frost in Winter.

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The 21st Sort grows naturally near the *Cape of Good Hope*; this rises with a shrubby Stalk, 8 or 10 Feet high, sending out several irregular Branches, garnished with roundish Leaves, whose Sides are erect, so form a Sort of Hood by the hollow Cavity made in the Leaf. The Base of the Leaves is cut in Form of a Heart-shaped Leaf, and from the Foot Stalk run many Nerves arising from a Point, but diverge toward the Sides; the Borders of the Leaves are sharply indented, those on the lower Part of the Branches have long Foot Stalks, and are placed without Order on every Side, but those on the upper Part have shorter Foot Stalks, and stand opposite. The Flowers are produced in large Panicles on the Top of the Branches; their Empalements are of one Leaf, deeply cut into five Segments, and closely covered with five Hairs. The Petals are large, entire, and of a purple blue Colour. It flowers in *June, July, August, and September*, and the Flowers are succeeded by Seeds, having short hairy Beaks.

The 22d Sort has some Appearance of the 21st, but the Leaves are of a thicker Substance, divided into many acute Angles, and have purple Edges, which are acutely indented. The Stalks and Leaves are very hairy. The Branches are not so irregular as those of the former; nor are the Bunches of Flowers near so large; these Differences are permanent in the Plants which are raised from Seeds, so it is undoubtedly a distinct Species, though Dr. *Linnaeus* supposes them to be the same.

The 23d Sort comes from the *Cape of Good Hope*, but is one of the oldest, and most common in the *English Gardens*; this rises with a shrubby Stalk, 4 or 5 Feet high, and divides into a great Number of irregular Branches, so as to form a large Head, which is often 8 or 10 Feet high. The Branches are garnished with roundish Heart-shaped Leaves, indented on their Edges in several obtuse Segments, which are cut into short Teeth at their Brims; these have a purple Circle, or Mark, like a Horseshoe, through the Leaf, going from one Side of the Base to the other, corresponding with the Border of the Leaf; these Leaves, when gently rubbed, have a Scent like scalded Apples. The Flowers are produced in pretty close Bunches, standing upon Foot Stalks about five or six Inches in Length, which comes out from the Wings of the Stalk, toward the End of the Branches, they are of a reddish purple Colour, and continue in Succession great Part of Summer; there is a Variety of this with fine variegated Leaves, which is preserved in most of the *English Gardens*, for the Beauty of its Leaves, but as this accidentally came from the other, it is not a distinct Species, therefore I have not enumerated it.

The 24th Sort grows naturally at the *Cape of Good Hope*; this rises with a soft shrubby Stem to the Height of 8 or 10 Feet, sending out several Branches, which are generally erect; these are garnished with roundish Kidney-shaped Leaves, of a thick Substance, and of a lucid green, standing on pretty long Foot Stalks; they are covered with soft Hairs on their under Side, and are placed without any Order. The Flowers grow in loose Bunches upon long stiff Foot Stalks, which come out from the Wings of the Stalk; they are of a bright scarlet Colour, so make a fine Appearance, and there is a Succession of Flowers during all the Summer Months.

The 25th Sort grows naturally at the *Cape of Good Hope*,

but has been many Years an Inhabitant of the *English* Gardens; this rises with a shrubby Stalk 4 or 5 Feet high, dividing into several weak irregular Branches, garnished with Leaves divided into 3 unequal Lobes, which are hairy and waved on their Edges; they are placed alternate on the Branches, and stand upon hairy Foot Stalks. The Flowers grow in close roundish Heads on the Top of the Foot Stalks, forming a Sort of *Corymbus*; they are of a purplish blue Colour, and continue in Succession great Part of the Summer. The Leaves of this Sort, when rubbed, have an Odour like dried Roses, from whence many have given it the Title of *Rose Geranium*.

The 26th Sort is a Native of the *Cape of Good Hope*; this rises with an upright shrubby Stalk to the Height of 7 or 8 Feet, sending out many pretty strong Branches, garnished with Leaves shaped somewhat like those of the Vine; those on the lower Part stand upon long Foot Stalks, but the upper have short ones; when the Leaves of this are rubbed, they have a Scent of Balm. The Flowers grow in compact Clusters on the Top of long naked Foot Stalks, which come out from the Wings of the Stalk, but rise much higher than the Branches, they are small, and of a pale blue Colour, so make no great Figure, but there is a Succession of them most Part of the Summer.

The 27th Sort rises with an upright shrubby Stalk, 7 or 8 Feet high, sending out several Side Branches, garnished with large, angular, rough Leaves, standing upon long Foot Stalks. The Flowers are produced in large Panicles at the End of the Branches; these are shaped somewhat like a Butterfly Flower, the two upper Petals, which are pretty large, and turn upward like a Standard in the leguminous Flowers; these are finely variegated, but the 3 under Petals are so small, as not to appear at a small Distance; these are reflexed downward, so are screened from Sight, unless the Flowers are viewed near. This Sort flowers in *May*, at which Time the Plants make a fine Appearance, but they are not succeeded by any more afterward, as most of the other Sorts are; this grows naturally at the *Cape of Good Hope*.

The 28th Sort is from the same Country; this rises with a shrubby Stalk, 6 or 7 Feet high, sending out several Side Branches, garnished with oblong, oval, fleshy, smooth Leaves, of a gray Colour, which are crenated on their Edges, and have an acid Flavour like Sorrel. The Flowers stand upon pretty long Foot Stalks, which arise from the Wings of the Stalks, each sustaining 3 or 4 Flowers, whose Petals are narrow, and unequal in Size; they are of a pale bluish Colour, with some Stripes of a light red; these continue in Succession most Part of the Summer. There is a Variety with scarlet Flowers, which is said to have been raised from the Seeds of this Sort. The Leaves of it are larger, and seem to be an intermediate Species between this and the 24th Sort, for the Flowers are larger than those of the 28th Sort, and are of a pale Scarlet Colour.

The 29th Sort hath a thick, fleshy, knotted Stalk, which rises about 2 Feet high, sending out a few slender fleshy Branches, garnished thinly with double winged Leaves, which, on the lower Part of the Stalk, stand upon Foot Stalks, but those above sit close to the

Branches. The Flowers are produced in small Clusters at the End of the Branches; these have five narrow white Petals, which make no Appearance, they continue in Succession most Part of the Summer. It grows naturally at the *Cape of Good Hope*.

The 30th Sort hath a round fleshy Stalk with swelling Knots at the Joints, which rise about 3 Feet high, and send out several irregular Branches, which are smooth; they are thinly garnished with smooth, fleshy winged Leaves, ending in obtuse Points; they are of a gray Colour, and stand upon short Foot Stalks. The Flowers stand 4 or 5 upon each Foot Stalk, which arises from the wings of the Stalk, and are of a dark purple Colour. The Petals are broader than those of the former Sort, and have a very agreeable Scent in the Evening, after the Sun has left them some Time; this and the former Sort are supposed to be one Species by *Dr. Linnaeus*, but they are very different in many Particulars, which are permanent in the Plants which come up from Seeds.

The 31st Sort hath a fleshy Stalk, which seldom rises a Foot high, and puts out very few Branches; these are garnished with smooth, light, green Leaves, divided into 3 Parts; the middle Segment being much larger than the others. The Flowers stand upon short Foot Stalks, each sustaining 2 or 3 Flowers on the Top, which are of a very deep scarlet Colour, and have unequal Petals; this Sort is not regular in its Season of flowering, sometimes in Spring, at other Times in Summer, and frequently in Autumn. The Leaves of this Sort fall off, so that the Stalks are frequently destitute of them for three or four Months in Summer, and appear as if they were dead, but in Autumn they put out fresh Leaves again.

The 32d Sort hath many weak shrubby Stalks, which require Support to prevent their falling on the Ground; these extend to the Length of 2 or 3 Feet, and are garnished with fleshy Leaves, divided into five obtuse Lobes, which are entire; these have slender Foot Stalks, which are fastened to the Middle of the Leaf, like the Handle of a Target. The Leaves are smooth, of a lucid green, and have a circular purple Mark in their Middle; they have an acid Flavour, and are placed alternate on their Branches. The Flowers are produced upon pretty long Foot Stalks, which come out from the Wings of the Stalk each Foot Stalk sustaining 4 or 5 purple Flowers, composed of 5 unequal Petals. This Sort continues a Succession of Flowers most of the Summer Months, and frequently ripens Seeds here.

The 33d Sort sends out several herbaceous Stalks, about a Foot and a Half in Length, which trail upon the Ground if they are not supported; these are garnished with roundish Hand-shaped Leaves, which are cut into many Parts, and are very hairy. The Flowers are of a pale bluish Colour, and stand several together upon very long Foot Stalks; there is a Succession of these during all the Summer Months, and the Seeds ripen about a Month after the Flowers are fallen; there is a Variety of this Sort with a dark Circle in the Middle of the Leaves, which is mentioned as a distinct Species, but I find it is apt to vary from Seeds.

The 34th Sort hath a very short fleshy Stalk, which divides near the Ground into several Heads, each having many

many Leaves, which arise on separate Foot Stalks from the Heads; these are Heart-shaped, soft, and downy, and have a strong Scent like Aniseed; from these Heads come out several slender Stalks, near a Foot in Length, which lie on the Ground, and are garnished with rounder Leaves than those near the Root, but of the same Texture, and have the like Odour. The Flowers are produced from the Side of these Stalks, 3, 4, or 5 standing together upon slender Foot Stalks; they are very small and white, so make little Appearance, but the Plant is preserved in Gardens for the Scent of its Leaves.

The 35th Sort hath a thick, roundish, tuberous Root, from which arise several hairy Leaves, which are finely divided, almost like those of the Garden Carrot; these spread near the Ground, and between these come out the Stalks, which rise about a Foot high, they are garnished with 2 or 3 Leaves of the same Sort with those below, but smaller, and sit closer to the Stalks; from these arise 2 or 3 naked Foot Stalks, terminated by a Truss of yellowish Flowers, marked with dark purple Spots, which smell very sweet after the Sun hath left them; these are frequently succeeded by Seeds, which ripen in Autumn. This is the Sort which has been long cultivated in Gardens, and is known by the Title of *Geranium noctu olens*, or Night-scented Crane's-Bill.

The 36th Sort hath a knobbed tuberous Root like the last, from which come out several pretty large Leaves, composed of many Lobes, set along the Mid-rib in the Form of a winged Leaf; these are narrow at their Base, but very much enlarged at their Ends, which are rounded, and cut all along their Side and Top, into many acute Points; the Stalks which sustain the Flowers, arise immediately from the Root, and sometimes have one or two small Leaves toward the Bottom, where they often divide into two naked Foot Stalks, each being terminated by a Truss of pale reddish Flowers, which smell sweet at Night.

The 37th Sort hath oblong tuberous Roots, from which come out several decompound winged Leaves, ending in many acute Points, the Segments of these Leaves are broader than those of the 35th Sort, and the Leaves are very hairy. The Stalks rise 18 Inches high, and are garnished with a single Leaf at the two lower Joints; these are singly winged, and the Lobes are narrow, standing at a wider Distance, and the Segments are more acute than those of the lower Leaves; at the two lower Knots, or Joints, arise two long naked Foot Stalks, each being terminated by a Truss of yellowish Flowers, which have long Tubes, and smell sweet in the Evening when the Sun has left them. This grows naturally at the *Cape of Good Hope*.

The 38th Sort hath a tuberous Root like the former, from which spring out many hairy Leaves, finely divided like those of the *Pulsatilla*, they have a hoary Appearance, and rise immediately from the Root, spreading on every Side near the Ground. The Foot Stalk of the Flower is naked, and rises from the Root; this grows about nine Inches high, and is terminated by a loose Truss of Flowers, which are of a very dark purple Colour, and smell sweet in the Evening.

The 39th Sort hath fleshy tuberous Roots like those of the former Sorts, from which come out 3 or 4 broad

Leaves, divided on their Borders into several Lobes, in Form of a Vine Leaf; these spread flat on the Ground; they are hairy, and crenated on their Edges, standing upon short Foot Stalks. The Foot Stalks of the Flowers rise immediately from the Root, and grow about a Foot high; they are naked, and are terminated by a Truss of dark purple Flowers with long Tubes, sitting close to the Foot Stalks, which have a very agreeable Odour in the Evening.

These five Sorts of tuberous rooted Crane's-bill, are, by *Linnaeus*, supposed to be but one Species; but I have propagated four of them from Seeds several Times, and have never found either of them vary from their Parent Plants, so I make no doubt of their being distinct Species, for their Difference of Leaves is as great as in any of the other Species.

The 40th Sort is an annual Plant, which grows naturally at the *Cape of Good Hope*; this rises with herbaceous branching Stalks, near a Foot high, garnished with doubly winged Leaves at each Joint; the lower Leaves stand upon long Foot Stalks, but those on the upper Part sit close to the Stalks. The Flowers stand upon naked Foot Stalks, which proceed from the Side of the Stalks, on the opposite Side to the Leaves; they grow 3 or 4 together upon short separate Foot Stalks; these are shaped somewhat like a papilionaceous Flower; the two upper Petals, which are large, form a Kind of Standard, the other three Petals are narrow, and reflexed downward; they are of a pale Flesh Colour, appearing in July, and the Seeds ripen in September, soon after which the Plants decay.

The 41st Sort hath a pretty thick tuberous Root, from which is sent out several irregular Stalks, which divide into Branches, and grow diffused; these have swelling Joints, and are somewhat ligneous; they are garnished with one double winged Leaf at each of the Joints, and opposite to the Leaves come out the Foot Stalks of the Flowers; those which are situated on the lower Part of the Stalk, are very long and naked, but those which terminate the Branches are shorter, and have one or two small Leaves set at their Base; these Foot Stalks are terminated by a small Truss of Flowers, shaped like those of the former Sort, but larger, and of a paler Colour; these continue in Succession most Part of the Summer; this and the former Sort, are supposed to be the same by Dr. *Linnaeus*, but the former is an annual Plant in every Country, perishing soon after the Seeds are perfected, and this latter is an abiding Plant with ligneous Stalks.

The 42d Sort is a biennial Plant, which grows naturally at the *Cape of Good Hope*; this sends out a great Number of very slender trailing Stalks, which are prostrate on the Ground, and extend a Foot and a Half in Length; they are garnished with small, roundish, Hand-shaped Leaves, which are crenated on their Edges. The Flowers sit upon short slender Foot Stalks, which come out at every Joint from the Side of the Stalks; they are very small, and of a reddish Colour; sometimes they are single, and at other Times there are two or three Flowers upon a Foot Stalk. They continue in Succession all the Summer, and the Seeds ripen in about five Weeks after the Flowers decay.

The 43d Sort hath a shrubby Stalk, which rises 4 or 5 Feet,

5 Feet, sending out several Branches, garnished with oblong Leaves, indented; and unequally sawed on their Edges, the Flowers stand on long Foot Stalks, which come out from the Side of their Branches; they are large, of a red Colour, and the two upper Petals are larger than the other, this Sort flowers in *June* and *July*.

All the Sorts of *African Crane's-bill* may be propagated by Seed; these may be sown upon a Bed of light Earth toward the End of *March*, where the Plants will appear in a Month or five Weeks after, and by the Beginning of *June* the Plants will be fit to remove, when they should be carefully taken up, and each planted in a separate Pot, filled with light Kitchen Garden Earth, and placed in a shady Situation till they have taken new Root, then they may be removed into a sheltered Situation, and placed among the hardier Green-house Plants, where they may remain till Autumn, when they must be removed into the Green-house, and treated as other hardy Kinds of Green-house Plants.

But those who are desirous to have their Plants large, and flower soon, sow the Seeds upon a moderate hot Bed in the Spring, on which the Plants will come up much sooner, and will be fit to remove long before those which are sown in the open Air; but when these Plants come up, there must be great Care taken not to draw them up weak; and when they are transplanted, the Pots should be plunged into another moderate hot Bed, observing to shade them from the Sun till they have taken new Root, then they must be gradually injured to bear the open Air, into which they should be removed the Beginning of *June*, and placed in a sheltered Situation with other exotick Plants. If these Plants are brought forward in the Spring, most of the Sorts will flower the same Summer, and the Plants will be very strong before the Winter, so will make a better Appearance in the Green-house.

The shrubby *African Geraniums* from the 21st to the 32d inclusive, and also the 41st and 43d Sorts, are commonly propagated by Cuttings, which, if planted in a shady Border, in *June* or *July*, will take good Root in 5 or 6 Weeks, and may then be taken up and planted into separate Pots, placing them in the Shade till they have taken new Root; after which they may be removed into a sheltered Situation, and treated as the Seedling Plants. The 29th, 30th, 31st and 32d Sorts, have more succulent Stalks than either of the other, so the Cuttings of these Sorts should be planted in Pots filled with light Kitchen Garden Earth, and plunged into a very moderate hot Bed, where they should be shaded from the Sun in the Heat of the Day, and should have but little Water, for these are very apt to rot with much Moisture, so they must only be gently refreshed now and then with Water; when these are well rooted, they may be separated and planted into Pots filled with the same Sort of Earth, and placed in the Shade till they have taken new Root, then they may be removed into a sheltered Situation, where they may remain till Autumn. These four Sorts should be sparingly watered at all Times, but especially in the Winter, for they are apt to take a Mouldiness with Moisture, or in a damp Air, they will thrive much better in an airy Glass Case, than in a Green-house, because in the former they will have more sun and Air, so will not be so liable to have a Mouldiness or Rot. But all the other shrubby Sorts are proper Furniture for the

Green-house, where they will only require Protection from Frost, but should have a large Share of free Air when the Weather is mild; they will require Water every Week, in mild Weather once or twice, but it should not be given them in too great Plenty, especially in frosty Weather. These Plants should be hardened in the Spring gradually, and toward the Middle or latter End of *May*, they may be taken out of the Green-house, and at first placed under the Shelter of Trees, where they may remain a Fortnight or three Weeks to harden, then should be removed into a Situation where they may be defended from strong Winds, and enjoy the Morning Sun till eleven o'Clock, where they will thrive better than in a warmer Situation.

As these shrubby Sorts grow pretty fast, they soon fill the Pots with their Roots, and if they stand long unremoved in Summer, they frequently put out their Roots through the Holes at the Bottom of the Pots into the Ground, and then the Plants will grow vigorously, but when they are suffered to grow long in this Manner, it will be difficult to remove them, for if their Roots are torn off, all their younger Branches will decay, and many Times the Plants are killed. Therefore the Pots should be moved once in a Fortnight or three Weeks, and the Roots which may be then pushing through the Holes cut off, to prevent their striking into the Ground. These Plants will also require to be new potted at least twice in the Summer; the first Time should be after they have been three Weeks or a Month out of the Green-house; the second should be towards the End of *August*, or Beginning of *September*, that the Plants may have Time to establish their new Roots before they are removed into the Green-house.

When these are new potted, all the Roots on the Outside of the Balls of Earth, should be carefully pared off, and as much of the old Earth drawn away from the Roots, as can be done with Safety to the Plants; then if they require it, they should be put into Pots a Size larger than those out of which they were taken, putting a Quantity of fresh Earth into the Bottom of the Pot; then place the Plants upon that, being careful the Ball about the Roots of the Plant, is not so high as the Rim of the Pot, that some Room may be left to contain the Water which may be given to the Plant. Then the Cavity all round the Ball should be filled up with fresh Earth, which should be gently pressed down, and the Bottom of the Pot beaten upon the Ground, to settle down the Earth, then the Plant should be well watered, and the Stem fastened to a Rail, to prevent the Wind from displacing the Roots, before they are fixed in the new Earth.

The Compost in which I have always found these Plants thrive best (where there has not been a Convenience of getting some good Kitchen Garden Earth) was fresh Hazel Loam from a Pasture mixed with a fourth or fifth Part of rotten Dung; if the Earth is inclinable to bind, then a Mixture of rotten Tan is preferable to Dung, but if it is right and warm, then a Mixture of Neat's Dung is best; this Compost should be mixed three or four Months before it is used, and should be turned over three or four Times, that the Parts may be well mixed and incorporated, but where a Quantity

of good Kitchen Garden Earth can be had, which has been well worked and is clean from the Roots of bad Weeds, there will need no Composition, for in that they will thrive full as well as in any Mixture which can be made for them, especially if the Earth has lain in a Heap for some Time, and has been two or three Times turned over to break the Clods, and make it fine; these Plants should not be planted in very rich Earth, for that will cause them to grow very luxuriant, but they will not flower so well as in a poorer Soil.

The 33d Sort hath herbaceous Stalks, so is best propagated by Seeds, which the Plants produce in great Plenty, but the Cuttings of this will take Root as freely as either of the other, but the seedling Plants are preferable to those propagated by Cuttings, and where the Seeds of this and many other of the *African* Sorts are permitted to scatter, there will be a Supply of young Plants come up the Spring following, provided the Seeds are not buried too deep in the Ground.

The 34th Sort may be propagated by Seeds, or from Heads slipped off from the short fleshy Stalk; these Heads should have their lower Leaves stripped off, that the Stalk which is to be planted may be clear of Leaves; then they may be planted single into a small Pot, or if the Heads are small, there may be two or three put into one small Pot, then they may be plunged into a very moderate hot Bed, which will forward their putting out Roots, and if they are shaded from the Sun and gently refreshed with Water, they will take Root in a Month or five Weeks, when they must be hardened gradually, and removed into the open Air, where they may remain till Autumn, when they must be removed into Shelter for the Winter Season.

The 35th, 36th, 37th, 38th and 39th Sorts are generally propagated by parting their Roots, the best Time for doing this is in *August*, that the young Roots may be established before the Cold comes on. Every Tuber of these Roots will grow, provided they have a Bud or Eye to them; these may be planted in the same Sort of Earth as was before directed, and if the Pots are plunged into an old Tan Bed, under a good Frame in Winter, the Plants will thrive better than in a Green-house; the Glasses of the Frame may be drawn off every Day in mild Weather, whereby the Plants will enjoy the free Air, and if in hard Frost, the Glasses are well covered to prevent the Cold penetrating to the Plants, it is all the Shelter they will require; but in this Situation, they should have but little Wet in Winter, therefore the Glasses should be kept over them in heavy Rains to keep them dry; but in mild Weather the Glasses may be raised on the upper Side to admit fresh Air to the Plants, which will give them greater Slope to carry off the Wet. With this Management the Roots will thrive and flower very strong every Year. These Sorts may also be propagated by Seeds.

The 40th Sort is an annual Plant, and is only propagated by Seeds, which should be sown upon a gentle hot Bed in Spring, to bring the Plants forward, otherwise if the Season should not prove very warm, the Plants will not perfect their Seeds in this Country. When the Plants are come up, and grown strong enough to remove, they should be each planted into a small Pot, and plunged into a moderate hot Bed again, observing to shade them till they have taken new Root, then they

must be gradually hardened to bear the open Air, into which they should be removed in *June*, and when the Plants have filled the small Pots with their Roots, they should be shaken out, and the Ball of Earth preserved to their Roots, and put into Pots a Size larger, in which they will flower and ripen Seeds, and soon after the Plants will decay.

The 42d Sort is also propagated by Seeds, which may be either sown upon a moderate hot Bed in Spring, or upon a Bed of light Earth in the open Air, where the Plants will come up very well, though they will not be so forward as those on the hot Bed. Those which are sown in the open Air will require no other Care, but to keep them clean from Weeds, and thin the Plants where they are too close. These Plants will flower in *July* and *August*, and if the Autumn proves favourable the Seeds will ripen in *September*, but if these should fail, those which were raised on the hot Bed will come earlier to flower, so there will be no Danger of their perfecting Seeds, and these Plants, if they are in Pots, may be preserved through the Winter, if they are plunged into an old Tan Bed under a Frame, and treated as the tuberous rooted Sorts before mentioned.

The shrubby Sorts must be looked over frequently during the Winter, while they are in the Green-house, to pick off all decayed Leaves from them, which, if left on, will not only render the Plants unsightly, but by their falling off, they will occasion Litter among the other Plants, and if they are suffered to rot in the House, they will occasion a foul, damp Air, which will be very prejudicial to all the Plants, therefore to avoid this, they should be constantly picked off every Week; and during the Summer Season they will require to be picked every Fortnight or three Weeks to keep them clean from dead Leaves; for as the Branches advance, and new Leaves are produced on their Top, the under Ones as constantly decay, and if left on till they drop off, will render the Plants very unsightly.

GERMANDER. See *Teucrium*.

GESNERA. *Plumier* Nov. Gen. 27. Tab. 9. Lin. Gen. Plant. 667. So named by *Father Plumier*, who discovered it in *America*, in Honour of *Conrad Gesner*, a very learned Botanist, and natural Historian.

The Characters are,

The Empalement of the Flower is of one Leaf, cut into five acute Parts at the Top, and is permanent, in which is situated the Germen; the Flower hath one Petal which is tubulous and first bent inward, and afterward out again like a Bugle Horn; the Brim is divided into five obtuse Segments which are equal; it hath four Stamina which are shorter than the Petal, terminated by single Summits, the Germen which sits under the Petal supports a single crooked Style, crowned by a beaded Stigma. The Germen afterward becomes a roundish Capsule, with two Cells, filled with small Seeds, which are fixed on each Side the Partition.

The Species are,

1. *GESNERA foliis lanceolatis crenatis hirsutis, pedunculis lateralibus longissimis paniculatis.* Gesnera with hairy Spear-shaped Leaves, which are crenated, and very long Foot Stalks supporting a Panicle of Flowers proceeding from the Sides of the Stalk. This is the *Gesnera amplo digitalis folio, tomentoso.* *Plum.* Nov. Gen. 27. *Gesnera* with a large woolly Fox-glove Leaf.

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2. *GESNERA foliis lanceolatis serratis sessilibus, pedunculis ramosis multifloris.* Lin. Sp. Plant. 612. *Gesnera* with Spear-shaped sawed Leaves sitting close to the Stalks, and branching Foot Stalks having many Flowers. This is the *Gesnera humilis flore flavescente.* Plum. Nov. Gen. 27. Low *Gesnera* with a yellowish Flower.

The 1st Sort grows naturally in the *West-Indies*; the Seeds were sent me from *Jamaica*, which succeeded in the *Chelsea* Garden; this rises with a shrubby Stalk 6 or 7 Feet high, which divides into 2 or 3 irregular Branches, covered with a russet Wool, and garnished with hairy Leaves 7 or 8 Inches long, and two and a Half broad in the Middle, having a russet woolly Midrib, and the Edges are crenated; these are placed on every Side the Branches without Order, and have short Foot Stalks; towards the End of the Branches come out the Foot Stalks of the Flowers at every Joint, arising from the Wings of the Stalk; these are naked and nine Inches in Length, branching at the Top into many smaller Foot Stalks, each sustaining a single Flower having a short crooked Tube, indented at the Top in five obtuse Parts, and of an obsolete purple Colour. These are succeeded by roundish Capsules sitting close in the Empalement, the Divisions of which arise above the Capsule, which Dr. *Linnaeus*, from *Plumier's* Figure, has taken for the Empalement sitting upon the Capsule, whereas the Capsule is distinct from the Empalement and is inclosed by it. The Capsule is divided into two Cells filled with small Seeds. It flowers here in *July* and *August*, but hath not ripened Seeds.

The 2d Sort is a Plant of humbler Growth, this seldom rises more than 3 Feet; the Leaves are much smaller, sawed on their Edges, and sit close to the Stalk, the Flowers stand on branching Foot Stalks, each sustaining many yellowish Flowers, which are deeper cut at their Brims than those of the first Sort. This was found growing naturally at *Cartagena* in *New Spain*.

There is a third Species of this Genus mentioned by *Plumier* which grows to a Tree, and hath spotted and fringed Flowers, but this I have not seen in any of the *English* Gardens. These Plants are propagated by Seeds, which must be procured from the Countries where they grow naturally; these should be brought over in their Capsules, which is the best Way to preserve the Seeds good, for as they are very small and light, so when they are separated from the Partition to which they adhere, they soon lose their vegetative Quality; I have received the Seeds several Times from *America*, which were taken out of the Vessels, but not one of them grew, till I had some sent in their Vessels which succeeded very well.

The Seeds should be sown in Pots filled with light Earth, and plunged into a hot Bed of *Tanners Bark*, as soon as they arrive, for they sometimes lie long in the Ground; those which I have sown in Autumn, came up the following Spring; therefore when they happen to arrive here at that Season, the Pots in which the Seeds are sown, should be plunged into the Tan Bed in the Stove, and during the Winter the Earth should be now and then gently watered, to prevent its drying too much, but it must not be too moist. In Spring the Pots should be removed out of the Stove, and

plunged into a fresh hot Bed, which will bring up the Plants soon after. When these are fit to remove, they should be each planted into a separate Pot, and plunged into a good hot Bed of Tan, observing to shade them till they have taken new Root, then they must be treated as other tender Plants from the same Countries.

In Autumn they must be plunged into the Tan Bed in the Stove, where, during Winter, they should have but little Water, for if they receive much Wet, it will destroy them. In this Stove the Plants must constantly remain, for they will not thrive if they are kept out of the Tan. In Summer they should have free Air admitted at all Times when the Weather is warm, and they must be frequently refreshed with Water during that Season, but it must not be given in too great Plenty. As the Plants advance in Growth they require larger Pots, but there must be Care taken not to over pot them, for they will not thrive in large Pots. With this Management the Plants will flower the second Year, and may be continued 3 or 4 Years, but they are not of long Duration in their native Country.

GEUM. Lin. Gen. Plant. 561. *Caryophyllata.* Tourn. Inst. Avens, or Herb Bennet; in French, *Benoite*.

The Characters are,

The Flower hath a one-leaved Empalement, which is cut at the Top into ten Segments, which are alternately smaller than the other. The Flower has five roundish Petals, which are narrow at their Base, where they are inserted in the Empalement; it hath a great Number of Awl-shaped Stamina, which are the Length of the Empalement, into which they are inserted, and are terminated by broad obtuse Summits. In the Center of the Flower is situated a great Number of Germina collected into a Head; these have Styles inserted in their Sides, which are long, hairy, and crowned by single Stigmas. The Germina afterwards become so many flat rough Seeds, which are hairy, and have the Style which is bent like a Knee adhering to them; these sit in the common Empalement.

The Species are,

1. *GEUM floribus erectis, fructu globofo, aristis uncinatis nudis, foliis lyratis.* Hort. Cliff. 195. *Geum* with erect Flowers, a globular Fruit, naked hooked Beards, and Harp-shaped Leaves. This is the *Caryophyllata vulgaris.* C. B. P. Common Avens or Herb Bennet.

2. *GEUM floribus nutantibus, fructu oblongo, aristis plumosis.* Hort. Cliff. 195. *Geum* with nodding Flowers, and an oblong Fruit with feathery Beards. This is the *Caryophyllata aquatica, nutante flore.* C. B. P. 321. Aquatick Herb Bennet with a nodding Flower.

3. *GEUM floribus nutantibus, fructu globofo, aristis nudis, foliis lyratis, foliolis rotundioribus.* *Geum* with nodding Flowers, a globular Fruit with naked Beards, and Harp-shaped Leaves with rounder Lobes. This is the *Caryophyllata Pyrenaica, amplissimo & rotundiori folio, nutante flore.* Tourn. Inst. 295. *Pyrenean Avens* with a very large and rounder Leaf, and a nodding Flower.

4. *GEUM flore erecto solitario, fructu oblongo, aristis plumosis.* Lin. Sp. Pl. 501. *Geum* with a single upright Flower, and an oblong Fruit with feathery Beards. This is the *Caryophyllata montana flore luteo magno.* J. B. Mountain Avens with a large yellow Flower.

5. *GEUM flore solitario erecto, fructu globofo, aristis tenuioribus*

tenuioribus nudis. Geum with a single erect Flower, and a globular Fruit with narrower naked Beards. This is the *Caryophyllata alpina minor*. C. B. P. 322. Smaller Alpine Avena.

6. *GEUM floribus erectis, fructu globoso, aristis uncinatis nudis, foliis ternatis.* Hort. Cliff. 195. Geum with upright Flowers, a globular Fruit with naked Beards and trifoliate Leaves. *Caryophyllata Virginiana, albo flore minore, radice inodora* H. L. 111. *Virginia Avena* with a smaller white Flower, and a scentless Root.

The first Sort grows plentifully by the Side of Hedges, and in Woods in most Parts of England, so is rarely admitted into Gardens. This stands in the List of Medicinal Plants, the Root is the only Part used; this is esteemed Cephalick and Alexipharmick and is manifestly of a binding Nature, so is useful in all Fluxes, &c.

The 2d Sort grows naturally in moist Meadows in the northern Parts of England. This is of humbler growth than the first, the lower Leaves have two Pair of small Lobes at Bottom, and three large ones at the Top, that which terminates being the largest. The Leaves upon the Stalks, are composed of three acute Lobes which sit close to the Stalk; the Flowers are of a purplish Colour, and nod on one Side, they appear in May, and the Seeds ripen in July.

The 3d Sort grows upon the Alps, and also on the Mountains in the North, this hath some Resemblance to the second Sort, but the Leaves are much larger and rounder, and are indented on their Edges; the Flowers are larger and of a Gold Colour. This flowers about the same Time as the second.

The 4th Sort grows naturally upon the Alps, this hath Leaves much larger than either of the other Species; the lower Leaves are composed of three or four Pair of small irregular Pinnæ set along the Mid-rib, which is terminated by one very broad roundish Lobe, which is crenated on the Edge. The Flowers are large, of a bright yellow Colour, standing single on the Top of the Stalk, which seldom rises more than five or six Inches high. It flowers in May and June.

The 5th Sort grows naturally on the Alps, it is a very low Plant, the Flower Stalks are about 3 Inches long, and bend on one Side; they are each terminated by one bright yellow Flower, about the Size of those of the common Sort. This flowers about the same Time as the former.

The 6th Sort grows naturally in North America, the Stalks rise 18 Inches high, and branch out at the Top into small Foot Stalks, each being terminated by a small white Flower, the Leaves are trifoliate, and the Root has no Scent. These are all very hardy Plants which require a shady Situation, but will thrive in any Soil, they may be easily propagated by Seeds which should be sown in Autumn, for when they are sown in the Spring, they do not grow the same Year.

GILLIFLOWER, or JULYFLOWER. See Dianthus.

GILLIFLOWER, or STOCK-GILLIFLOWER. See Cheiranthus.

GILLIFLOWER, the Queen's or Dame's Violet.

See Hesperis.

GINGER. See Amomum.

GINGIDIUM. See Arteria.

GLADE is an open and light Passage made through a Wood, by lopping off the Branches of Trees along that Way.

GLADIOLUS. Lin. Gen. Plant. 55. Tourn. Inst. R. H. 365. Tab. 190. of *Gladius*, Lat. a Sword; Cornflag; in French, *Glaicul*.

The Characters are,

The Flowers are included in Sheaths, which stand at a Distance from each other; the Petal of the Flower is cut into six Parts, three of the upper are near together, the three under spread open, but they all form a short incurved Tube with their Base; they have three Awl-shaped Stamina, which are inserted into every other Petal, and all of them ascend to the upper Petal, and are terminated by oblong Summits. The Germen is situated below the Flower, supporting a single Style the Length of the Stamina, crowned by a concave trifid Stigma. The Germen afterward becomes an oblong swelling three cornered Capsule, with three Cells, opening with three Valves, filled with roundish Seeds.

The Species are,

1. *GLADIOLUS foliis ensiformibus, floribus distantibus.* Lin. Sp. Plant. 36. Cornflag with Sword-shaped Leaves, and Flowers standing at a Distance. *Gladiolus floribus uno versu dispositis.* C. B. P. 41. Cornflag with Flowers disposed on one Side the Stalk.

2. *GLADIOLUS foliis ensiformibus, floribus ancipitibus.* Cornflag with Sword-shaped Leaves, and Flowers standing on both Sides the Stalk. *Gladiolus utrinque floribus.* C. B. P. 41. Cornflag with Flowers on each Side the Stalk.

3. *GLADIOLUS foliis ensiformibus, spatibus longioribus.* Cornflag with Sword-shaped Leaves and longer Sheaths to the Flowers. *Gladiolus major Byzantinus.* C. B. P. 41. Greater Cornflag of Byzantium, and the *Gladiolus foliis ensiformibus floribus majoribus distantibus.* Fig. Plant. Plate 142.

4. *GLADIOLUS foliis ensiformibus, floribus maximis incarnatis.* Cornflag with Sword-shaped Leaves, and very incarnate Flowers. *Gladiolus maximus indicus.* C. B. P. Greatest Indian Cornflag.

5. *GLADIOLUS foliis linearibus, floribus distantibus, corollarum tubo limbis longiore.* Lin. Sp. Pl. 37. Cornflag with very narrow Leaves, Flowers standing at a Distance from each other, and the Tube longer than the Margins of the Petal. *Gladiolus Africanus, folio gramineo, floribus carneis, maculam rhomboideam inscriptis, uno versu positus.* Boerb. Ind. alt. 2. 127. African Cornflag, with a grassy Leaf, and Flesh coloured Flowers, marked with a purple rhomboid Spot, ranged all on one Side the Stalk.

6. *GLADIOLUS foliis linearibus sulcatis, caule bifloro, tubo longissimo, segmentis aequalibus.* Cornflag, with very narrow channelled Leaves, and a Stalk bearing two Flowers with a very long Tube, and equal Segments. *Gladiolus bifolius & biflorus, foliis quadrangulis.* Trew. Tab. 39. Lilly Cornflag with two Leaves and Flowers, and four cornered Leaves.

The 1st Sort grows naturally in arable Land, in the warm Countries of Europe, and was formerly cultivated in

in the *English* Gardens, where the Roots have multiplied so greatly as to become a most troublesome Weed, and very difficult to eradicate; this hath a round compressed tuberous Root of a yellowish Colour, and covered with a brown furrowed Skin, like those of the large yellow vernal Crocus; from the Root arise two flat Sword-shaped Leaves, which embrace each other at their Base, and between these arise the Flower Stalk which grows near 2 Feet high, having one or two narrow Leaves embracing it like a Sheath; the Stalks are terminated by 5 or 6 purple Flowers, standing above each other at some Distance, and ranged on one Side of the Stalk; each of these has a Spatha (or Sheath) which covers the Flower Bud before it expands, but splits open lengthways when the Flowers blow, and shrivel up to a dry Skin, remaining about the Seed Vessel till the Seeds are ripe. The Flower hath but one Petal, which is cut almost to the Bottom in 6 Parts, so as to appear like a Flower of 6 Petals; the three upper Segments stand near together, and rise like a labiated Flower; the under one turns downward, and the two Side Segments form the Chaps of the Flower, and spread open at the Top, but are curved downward at the Bottom. They are ranged along one Side of the Stalk, and are of a purplish red Colour. This flowers the latter End of May, and in June, and the Seeds ripen the Beginning of August; it requires no Care, for when it is once planted in a Garden, it will multiply too fast.

There is a Variety of this with white Flowers, and another with Flesh coloured Flowers, which have accidentally risen from Seeds, so are not different Species.

The 2d Sort differs from the first, in having the Flowers ranged on both Sides the Stalk, but in other Respects, it is very like to that; of this there is a Variety with white Flowers, but these are not so common in the *English* Gardens as the former.

The 3d Sort hath larger Roots than either of the former, but are of the same Form; the Leaves are also much broader and longer, the Veins or Channels of the Leaves deeper; the Flower Stalks rise higher; the Flowers are much larger and of a deeper red than those of the former Sorts, and the Sheaths longer. This Plant makes a fine Appearance in flower, so is worthy of a Place in every good Garden, and the rather, because the Roots do not increase so fast as to become troublesome in the Borders. This is propagated by Offsets, which are sent off from the Roots, in the same Manner as Tulips. The Roots may be taken out of the Ground the End of July, when their Stalks decay, and may be kept out till the latter End of September, or the Beginning of October, at which Time they should be planted in the Borders of the Flower Garden, where they will thrive in any Situation, and being intermixed with other Flowers of the same Growth, will add to the Variety.

The 4th Sort grows naturally at the *Cape of Good Hope*, from whence I have several Times received the Seeds. This has been many Years cultivated in the *English* Gardens, but very rarely flowers here; for in near thirty Years that I have cultivated this Sort, I have never seen it but once in flower, though I have kept it in all Situations and planted it in various Soils. The Roots increase very fast, but will not live in the open

Air through the Winter in this Country. The Roots of this Sort are broader and flatter than those of any of the other Sorts, and are covered with a netted Skin; the Leaves come out in the same Manner embracing each other like the former Sorts; they are longer, smoother, and of a brighter green, than any of the others; these begin to appear in September, and continue growing in Size till after Christmas; they begin to decay in March, and the latter End of May are quite withered, when the Roots may be taken up, and kept out of the Ground till August; the Time of its flowering is in January. The Flowers of this Sort are placed on each Side the Stalk, and sit close to it like the Grains of the Flat Barley, the Sheaths between the Flowers are not so long as those of the other Sorts, and form a Kind of scaly Covering to them. The Flowers are of a bright red Colour without, but the three lower Segments are yellowish within, with a few scarlet Stripes. The Flowers do not all open at the same Time, but the lower ones decay before those on the upper Part of the Spike are in Beauty, however they make a fine Appearance at a Season when all Flowers are valuable.

This Sort propagates by Offsets very fast, these should be planted in Pots filled with light Kitchen Garden Earth, and placed in a Green-house in Winter to protect them from Frost, but they do not require any artificial Warmth, for I have with a slight Shelter preserved them through the Winter in the full Ground, when the Frost has not been very severe; and I have always found that those Plants which were hardly treated, grew much stronger than those which were placed in a moderate Degree of Warmth; so where there is a Convenience of covering a warm Border with Glasses in the Winter; if these Roots are planted in that Border, there will be a greater Probability of their flowering, than in any other Method of Culture.

The 5th Sort grows naturally at the *Cape of Good Hope*, from whence I received the Seeds, which succeeded in the *Chelsea* Garden, where the Plants annually produce their beautiful Flowers.

This hath a round, smooth, bulbous Root, which is covered with a thin dark coloured Skin, from which come out in Autumn 2 or 3 very narrow grassy Leaves, folded over each other at their Base, but open flat above; these rise near 2 Feet high. In the Spring arises a single Stalk from between the Leaves, about 2 Feet long, which always bend on one Side; toward the upper Part of this come out 2 or 3 Flowers, ranged on one Side of the Stalk, standing upright, each having a narrow Spatha, or Hood, and long slender Tubes, which swell large upward, and are divided into 6 Parts, which are nearly equal. The Flower is of a dusky Flesh-colour, and each Segment of the Petal has a rhomboidal Mark of a dark red, or purple Colour; afterward the Tube of the Flower opens, the deep Division of the Petals is seen, and the 3 Stamina, with their Summits, appear, attended by the Style with its trifid Stigma, arising from the Germen. This Plant flowers in May and the Beginning of June; as it is a Native of a warm Country, it requires Protection from Frost; therefore the Bulbs should be planted in Pots filled with light Earth, and placed in the Green-house in Winter, or where there is not such Convenience, they may be put under a hot Bed.

GLA

Bed Frame during that Season, where they may have Air in mild Weather, and be screened from the Frost; in such Situations I have had them thrive and flower very well.

This is propagated by Offsets from the Root in the same Manner as the last, and also by Seeds, which are frequently perfected in *England*; these should be sown the latter End of *August*, in Pots filled with light Earth, and placed in a shady Situation till the Middle of *September*; then the Pots should be removed where they may have the Sun great Part of the Day, and in *October* they must be placed under a hot Bed Frame, to protect them from Frost and great Rains, but must enjoy the free Air in mild Weather. In Spring the young Plants will appear, when they will require a little Water once in 8 or 10 Days, but it should be given them sparingly, for too much Wet will rot these tender Bulbs. In *May*, when the Danger of Frost is over, the Pots should be removed to a sheltered Situation, where they may have the Morning Sun till Noon; and if the Season proves dry, they must be now and then refreshed with Water. Toward the latter End of *June*, the Leaves of these Plants will decay, then the Roots should be taken up, and may be mixed with Sand, and kept in a dry Room till the End of *August*, when they should be planted again, and as the Roots are small, 4 or 5 may be planted into each Halfpenny Pot, filled with light Earth; these should be placed where they may have only the Forenoon Sun, till the Middle of *September*, when they should have a warmer Situation, and in *October* they must be placed under a hot Bed Frame as before, and treated in the same Way during the Winter Season; in the Spring they must be placed in the open Air till their Leaves decay, when they may be again taken out of the Ground, and treated as before; but as the Roots will have grown to a larger Size, so when they are planted again, they should each have a separate Halfpenny Pot, because now they will be large enough to flower, so may be treated as the old Roots.

The 6th Sort is also a Native of the *Cape of Good Hope*; from whence I received the Seeds; the Root of this Sort is oval, not compressed as those of the common Sorts. The Leaves are very long and narrow, having two deep Furrows running the whole Length, the Mid-rib rising very prominent, so as to have the Appearance of a four-cornered Leaf. The Leaves are single, and are wrapped close about the Flower Stalk at their Base to a considerable Length; there are seldom more than two of these Leaves from one Root; the Stalk is slender and round, and rises about 2 Feet high, and at the Top is garnished with 2 Flowers, placed about 2 Inches and a Half asunder on the same Side of the Stalk, each have a short Spatha, or Sheath, embracing the Germen and the Base of the Tube, which is long, narrow, and recurved, but enlarges greatly before it is divided. The upper Part of the Flower is cut into six equal Segments, which end in acute Points of a purplish Colour, which form a Stripe through the Middle of each Segment. The Petal is of a Cream Colour, and fades to a Sulphur Colour before it decays. This flowers in *June*, and sometimes the Seeds ripen well in *England*. This may be propagated by Offsets from the Root, or by Seeds as the 5th Sort, and the Plants require the same Treatment.

GLE

GLANDIFEROUS Trees are such Trees as bear Mast; as Acorns, &c.

GLANDULOUS Roots are such Roots as grow Kernel-wise.

GLANS is that Sort of Fruit which is contained within a smooth, but hard Bark, having but one Seed; its hinder Parts covered with a Kind of Cup, the fore Part being bare, as Acorns; but it is properly the Fruit without the Cup.

GLASTENBURY THORN. See *Mespilus*.

GLAUCIUM. See *Chelidonium*.

GLAUX, Sea Chickweed, or Milkwort, and black Saltwort, is a low trailing perennial Plant, with Leaves somewhat like Chickweed, but of a thicker Consistence, which sit close to the Stalks. The Flowers come out from the Bosom of the Leaves, they are white, and like those of Chickweed. This is seldom cultivated in Gardens, so I shall not trouble the Reader with a further Account of it. This grows upon the Sea Shores in most Parts of *England*.

GLECHOMA. Ground Ivy, Gill go by the Ground, Ale Hoof, or Turn Hoof.

This Plant grows naturally under Hedges, and upon the Sides of Banks in *England*, but is rarely cultivated in Gardens, so I shall pass over it here.

GLEDITSIA. *Lin. Gen. Plant.* 1025. *Acacia. Raii. Meth.* 161. Honey Locust, or three-thorned *Acacia*.

The Characters are,

It hath male and hermaphrodite Flowers in the same Katkin, and female Flowers in different Plants. The male Katkins are long, compact, and cylindrical, they have each a three leaved small Empalement; they have 3 roundish Petals, which spread open in Form of a Cup; these have a turbinate Nectarium, whose Mouth afterward grows to the Parts of Frustrification; they have 6 slender Stamina, which are longer than the Petals terminated by oblong compressed Summits. The hermaphrodite Flowers in the same Katkin, are situated at the End; these have Empalements, Petals, and Stamina like the male, and have a Germen, Style, and Seeds like the female, which are situated on different Trees, and are disposed in a loose Katkin; these have a five leaved Empalement, and have 5 oblong Petals, with 2 short Thread-like Nectariums, and a broad Germen longer than the Petals, supporting a reflexed Style, crowned by a thick Stigma. The Germen becomes a large flat Pod, with several transverse Partitions, having a Pulp in each Division, surrounding one hard roundish Seed.

The Species are,

1. GLEDITSIA *spinis ternatis, foliis pinnatis, siliquis latis longissimis caule arboreo.* *Gleditsia* with three Thorns, winged Leaves, very long broad Pods, and a Tree-like Stalk. *Acacia Americana abruæ folio triacanthos, five ad axillas foliorum, spinâ triplici donatâ. Pluk. Mant.* 1. Three thorned *American Acacia*.

2. GLEDITSIA *spinis paucioribus, foliis pinnatis, siliquis ovalibus.* *Gleditsia* with fewer Spines, winged Leaves, and oval Pods. *Acacia Abruæ folio triacanthos, capsulâ ovali unicum semen claudente. Catesb. Car.* 1. p. 43. Three thorned *Acacia* with an *Abrus* Leaf, and an oval Pod containing one Seed.

These Trees grow naturally in *America*; the 1st Sort is very common in most Parts of *North America*, where it

it is known by the Title of Honey Locust; this has been many Years cultivated in the *Englisb* Gardens, and is known among the Gardeners by the Title of three thorned *Acacia*. This Tree rises with an erect Trunk, to the Height of 30 or 40 Feet, and is armed with long Spines, which have two or three smaller coming out from the Side; these are frequently produced in Clusters at the Knots, and are sometimes 3 or 4 Inches long. The Branches are armed with the same Sort of Spines, and are garnished with winged Leaves composed of 10 Pair of small Leaves, which sit close to the Mid-rib, and are of a lucid green. The Flowers come out from the Side of the young Branches in Katkins; they are of an herbaceous Colour, so make no Figure. The hermaphrodite Flowers are succeeded by Pods near a Foot and a Half long, and 2 Inches broad, divided into many Cells by transverse Partitions, each containing one smooth, hard, oblong Seed, surrounded by a sweet Pulp.

The Leaves of this Tree seldom come out till *June*, in this Country, and the Flowers appear the latter End of *July*, but they do not flower till they are of a large Size; there was one Tree in the *Chelsea* Garden which produced Flowers several Years, and there is one now growing in the Bishop of *London's* Garden at *Fulbam*, which produced Pods in the Year 1728, and came to their full Size, but the Seeds did not ripen.

The second Sort hath much the Appearance of the first, but it hath fewer and longer Spines. The Leaves are smaller, and the Pods are oval, containing but one Seed; this was discovered by the late Mr. *Catesby*, in *Carolina*, from whence he sent the Seeds to England, by the Title of Water *Acacia*, by which it is known in the Gardens.

These Trees are propagated by Seeds, which must be procured from *America*, where they grow naturally; those of the 1st Sort are annually sent to England by the Title of Locust, or Honey Locust, to distinguish it from the false *Acacia*, which is frequently called Locust Tree in *America*; these Seeds may be sown on a Bed of light Earth in Spring, burying them Half an Inch deep, and if the Spring prove dry, they must be frequently watered, otherwise the Plants will not come up the 1st Year, for I have sometimes had the Seeds remain 2 Years in the Ground before they have come up; therefore those who are desirous to save Time, should sow them as soon as they arrive, and plunge the Pots into a moderate hot Bed, observing to water them frequently; by this Method most of the Plants will come up the same Season, but these should be gradually inured to bear the open Air, for if they are continued in the hot Bed, they will draw up weak; during the Summer Season, those Plants in Pots will require frequent Waterings, but those in the full Ground will not dry so fast, therefore need no Water, unless the Season should prove very dry. In Autumn, those in the Pots should be placed under a hot Bed Frame to protect them from Frost, for these young Plants generally keep growing late in the Summer, so the upper Part of their Shoots is tender, and the early Frosts of the Autumn often kill the Ends of them, if not protected, and this frequently occasions great Part of the Shoots decaying in Winter, for which Reason those Plants in the full Ground should be covered with Mats in Autumn, on the first Appearance of Frost, for a

small Frost in Autumn will do more Mischief to these young Shoots which are full of Sap, than severe Frost when the Shoots are hardened.

The following Spring the Plants may be transplanted into Nursery Beds, at a Foot Distance Row from Row, and six Inches asunder in the Rows, but this should not be performed 'till *April*, after the Danger of hard Frost is over; for as they do not put out their Leaves, till very late, so there will be no Hazard in removing them any Time before *May*. If the Season should prove dry, they must be watered, and if the Surface of the Beds is covered with Moss, or Mulch, to prevent the Earth from drying, it will be of great Service to them. In these Beds the Plants may remain two Years, during which Time they must be constantly kept clean from Weeds, and in Winter there should be some rotten Tan, or other Mulch, spread over the Ground to keep out the Frost. If the Plants thrive well, they will be fit to transplant to the Places where they are to remain, after two Years Growth; for they do not bear removing when large, the best Season for transplanting of these Trees, is late in the Spring; they thrive best in a light deep Soil, for in strong shallow Ground they become mossy, and never grow large; they should also have a sheltered Situation, for when much exposed to Winds, their Branches are frequently broken in the Summer Season, when they are fully clothed with Leaves.

GLOBULARIA. *Lin. Gen. Pl.* 106. *Tourn. Inst. R. H.* 466. *Tab.* 265. Blue Daisy.

The Characters are,

It hath a Flower composed of many Florets, which are included in one common scaly Empalement; each Floret has an Empalement of one Leaf, which is tubulous, and cut into 5 Parts at the Top. The Florets have one Petal, whose Base is tubulous, but the Brim is cut into 4 Parts, the upper Segment, which is the least, is reflexed; they have 4 Stamina the Length of the Petal, terminated by distinct Summits; in the Bottom of the Tube is situated an oval Germen, supporting a single Style, crowned by an obtuse Stigma. The Germen afterward becomes an oval Seed, sitting in the common Empalement.

The Species are,

1. GLOBULARIA caule herbaceo, foliis radicalibus tridentatis, caulinis lanceolatis. *Flor. Suec.* 109. Globularia with an herbaceous Stalk, the lower Leaves divided into three Points, and those on the Stalks Spear-shaped. *Globularia vulgaris. Tourn.* 467. Common Globularia.

2. GLOBULARIA caule nudo, foliis integerrimis lanceolatis. *Lin. Sp. Pl.* 97. Globularia with a naked Stalk, and Spear-shaped entire Leaves. *Globularia Pyrenaica, folio oblongo, caule nudo. Tourn.* 467. Pyrenean Globularia, with an oblong Leaf, and naked Stalk.

3. GLOBULARIA caule fruticoso, foliis lanceolatis tridentatis integrisque. *Prod. Leyd.* 190. Globularia with a shrubby Stalk, Spear-shaped Leaves ending in three Points, and entire. *Globularia fruticosa, myrti folio tridentato. Tourn.* 467. Shrubby Globularia with a trifid Myrtle Leaf.

4. GLOBULARIA foliis radicalibus crenato aculeatis, caulinis integerrimis mucronatis. *Lin. Sp. Pl.* 96. Globularia with lower Leaves crenated and prickly, those on the Stalks entire, and ending in a Point. *Globularia spinosa. Tourn.* 467. Prickly Globularia.

5. GLOBU-

5. *GLOBULARIA caule subnudo, foliis cuneiformibus tricuspidatis, intermedio minimo.* Lin. Sp. Pl. 96. *Globularia* with a naked Stalk, and Wedge-shaped Leaves, ending in three Points, whose middle Segment is the least. *Globularia Alpina minima, origani folio.* Tourn. 467. Smallest Alpine *Globularia* with a wild Marjoram Leaf.

6. *GLOBULARIA caule subnudo, capitulis alternis sessilibus, foliis lanceolato-ovatis integris.* Lin. Sp. Pl. 97. *Globularia* with a naked Stalk, alternate Heads fitting close to the Stalks, and oval Spear-shaped entire Leaves. *Globularia Orientalis, floribus per caulem sparsis.* Tourn. Car. 35. Eastern *Globularia* with Flowers scattered along the Stalks.

The 1st of these Plants grows plentifully about *Montpelier*, as also at the Foot of the Mountains *Jura* and *Saleva*, and in many other Parts of *Italy*, and in *Germany*; this Plant hath Leaves very like the Daisy, but thicker and smoother. The Flowers grow on Foot Stalks about six Inches high, and are of a globular Form, being composed of several Florets, included in one common scaly Empalement, they are of a fine blue Colour, and appear in *June*; these are succeeded by Seeds, which sit in the Empalement, and ripen in Autumn.

The 2d Sort grows plentifully in the Woods, near the Convent of the *Cartusians*, and on the *Pyrenean* Mountains; this is much larger than the former, and the Foot Stalk is quite naked. The Leaves are narrower, and much longer.

The 1st and 2d Sorts may be propagated by parting their Roots, after the Manner of Daisies. The best Season for parting and transplanting them is in *September*, that they may take new Root before the frosty Weather comes on. They should be planted in a shady Situation, and loamy Soil, in which they will thrive much better than in light Ground, and an open Situation; but the Plants should not be removed oftener than every other Year, if they are required to flower strong.

The 3d Sort grows about *Montpelier*, in *France*; and in *Valentia*, and several other Parts of *Spain*. This has a hard woody Stem, which rises about 2 Feet high, having many woody Branches, beset with Leaves like those of the Myrtle Tree. On the Top of the Branches the Flowers are produced, which are of a blue Colour, and Globe-shaped; this Plant may be propagated by Cuttings, which should be cut off in *April*, just before they begin to make new Shoots; they should be planted into Pots filled with light fresh Earth, and placed into a very moderate hot Bed, observing to water and shade them until they have taken Root, when they may be taken out of the Bed, and inured to bear the open Air by Degrees. In Summer these Plants may be exposed with other hardy exoticks, and in Winter they should be placed under a hot Bed Frame, where they may enjoy the free Air in mild Weather, but should be screened from hard Frost, which will destroy them; but in mild Winters they will live in the open Air. This Plant never produces good Seeds in this Country.

The 4th Sort was found in the Mountains of *Granada*, by Dr. *Albinus*; this Plant is of low Growth, and may be propagated as the first; as may also the fifth Sort, which is the least of all the Sorts, and the most

hardy, therefore should have a shady Situation, and a cool moist Soil.

The 6th Sort was found by Dr. *Tournefort*, in the *Levant*; this is somewhat tender, and should be sheltered from the Frost in Winter, under a Frame, but in Summer should be exposed with other hardy exoticks, and will require to be frequently watered in dry Weather. This may be propagated by Seeds, or by parting the Roots, as was directed for the former Sorts.

GLORIOSA. Lin. Gen. Pl. 374. *Metbonica.* Tourn. Acad. R. Scien. 1706. The Superb Lily.

The Characters are,

The Flower hath no Empalement; it hath 6 long Spear-shaped Petals, which are waved, and reflexed to the Bottom. It hath 6 Stamina, which spread open each Way, and are terminated by prostrate Summits. In the Center is situated a globular Germen, supporting a slender inclining Style, crowned by an obtuse triple Stigma. The Germen afterward becomes an oval thin Capsule having 3 Cells, filled with globular Seeds disposed in a double Range.

The Species are,

1. *GLORIOSA foliis longioribus capreolis terminalibus.* Superb Lily with longer Leaves ending with Claspers. *Metbonica Malabarorum.* Hort. Lugd. 688. *Metbonica* of *Malabar*, and the *Lilium Zeylanicum superbum.* Hort. Amst. 1. p. 69. Superb Lily of *Ceylon*.

2. *GLORIOSA foliis ovato-lanceolatis acutis.* Superb Lily with oval, Spear-shaped, acute Leaves.

The 1st Sort grows naturally on the Coast of *Malabar*, and also in *Ceylon*, from whence it was first brought to the Gardens in *Holland*, where it has been many Years cultivated; it hath an oblong fleshy Root of a whitish Colour, and of a nauseous bitter Taste, from the Middle of which arises a round weak Stalk, which requires Support to prevent its trailing on the Ground. The Stalks grow to the Height of 8 or 10 Feet, and are garnished with Leaves placed alternate on every Side; these are smooth, about 8 Inches long, and one and a Half broad at the Base, growing narrower 'till within 2 Inches of the End, which runs out in a narrow Point, ending with a Tendril, or Clasper, by which it fastens to the neighbouring Plants for Support. At the upper Part of the Stalk the Flower is produced, standing on a slender Foot Stalk; it is composed of six oblong Petals, ending with acute Points, which, on their first opening, are of an herbaceous Colour, and spread wide open; the Flower hanging downward as the Crown Imperial and Fritillary, but afterwards the Petals turn quite back, and change to a very beautiful red Flame Colour, their acute Points meeting at the Top; these Petals are finely waved on their Edges. The six Stamina spread out every Way almost horizontal, and are terminated by prostrate Summits. In the Center of the Flower is situated a roundish Germen, supporting an inclining Style, crowned by a triple Stigma. This Plant flowers in *June* and *July*, but does not perfect Seeds in this Country. The Stalks decay in Autumn, and the Roots remain inactive all the Winter, and the new Stalks come out in *March*. The Roots and every Part of this Plant is very poisonous, so should not be put in the Way of Children.

The Seeds of the second Sort were sent me by *Mons. Richard*, Gardener to the French King, at *Triaron*; this

hes e were brought from *Senegal*, by *Monf. Adanson*, who discovered this Plant growing there naturally; this is said to have a blue Flower, but the Plants which are in the *Chelsea* Garden are too young to flower. This hath a climbing Stalk, garnished with smooth Leaves, about 2 Inches long, and 2 broad, ending in acute Points, but have no Tendril, or Clasper. The Stalks as yet have not grown more than a Foot high here, but have the Appearance of climbing like the other Sort. The Leaves have a strong disagreeable Scent on being handled, so as to be troublesome to the Head if too near, or long smelt to.

As these Plants do not produce Seeds in this Country, so they are only propagated by their Roots; those of the 1st Sort creep and multiply pretty fast, but the 2d hath not as yet put out any Offsets; but as the Plants are young, we cannot as yet say how they may encrease when of a proper Age. These Roots may be taken out of the Ground when their Stalks are decayed, and preserved in Sand during the Winter Season, but they must be kept in the Stove, or a warm Room, where they can receive no Injury from the Cold, and in Spring they must be planted in Pots filled with light Earth, and plunged into the Tan Bed in the Stove; but others choose to let the Roots continue in the Ground all Winter, keeping the Pots always in the Tan Bed; where this is practised, the Roots should have very little Water in Winter, for as they are then in an inactive State, Moisture at that Time frequently rots the Roots.

Toward the latter End of *March*, or Beginning of *April*, their Stalks will appear, when there should be some tall Sticks put down by them to support them, otherwise they will trail over the neighbouring Plants, and the first Sort will fasten to the Plants by the Tendrils, which are at the Ends of the Leaves. The Stalks of this Sort will rise 10 or 12 Feet high, if the Roots are strong, and some of the Stalks will produce 2 or 3 Flowers, which come out from the Wings of the Stalk near the Top; these Flowers make a fine Appearance in the Stove, during their Continuance, which is seldom more than 10 Days, or a Fortnight. In Summer, when the Plants are growing, they will require frequently to be watered, but they must not have it in too large Quantities, for they are very subject to rot with much Wet. Those Roots which are not taken out of the Pots in Winter, should be transplanted and parted the Beginning of *March*, before they put out new Fibres, or Stalks, for they must not be removed when in a growing State; the Pots in which these Roots are planted, should not be too large, for unless they are confined, they will not put out strong Stalks; the largest Roots may be planted in Twopenny Pots, but the small ones will require only Pots of about 5 or 6 Inches over at the Top.

GLYCINE. *Lin. Gen. Pl.* 797. *Apiss. Boer. Ind. Alt.* Knobbed-rooted Liquorice Vetch.

The Characters are,

The Empalement of the Flower is of 1 Leaf, divided into 2 Lips at the Top, the upper Lip being obtuse and indented; the lower Lip is longer, trifid, and acute, the middle Indenture being extended beyond the other. The Flower is of the Butterfly Kind. The Standard is Heart-shaped, deflexed on the Sides, gibbous on the Back, and indented at the Point. The Wings are small, oblong, and oval toward

their End, and bend backward. The Keel is narrow, Sickles-shaped, turning upward with its Point to the Standard, where it is broadest. It hath 10 Stamina, 9 of which are joined in one Body, and the other stands single, terminated by single Summits. In the Center is situated an oblong Germen supporting a spiral cylindrical Style, crowned by an obtuse Stigma. The Germen afterward becomes an oblong Pod with two Cells, inclosing Kidney-shaped Seeds.

The Species are,

1. GLYCINE foliis pinnatis ovato-lanceolatis. *Hort. Upsal.* 227. Glycine with oval Spear-shaped winged Leaves. *Astragalus tuberosus scandens, Fraxini folio. Tourn. Inst.* 415. Climbing tuberous Milk Vetch with an Ash Leaf, and the *Apios Americana. Cornut.* 200.

2. GLYCINE foliis pinnatis caule perenni. *Hort. Cliff.* 361. Glycine with winged Leaves and a perennial Stalk. *Phaseoloides frutescens, Caroliniana, foliis pinnatis, floribus caeruleis conglomeratis. Hort. Angl. Tab.* 15. Carolina Kidney Bean Tree, with winged Leaves, and blue Flowers growing in Whorls.

3. GLYCINE foliis pinnatis conjugatis, pinnis ovatis oblongis obtusis. *Flor. Zeyl.* 284. Glycine with winged Leaves placed by Pairs, and the Lobes oval, oblong, and obtuse. This is the *Orobis Americanus, fructu coccineo nigra macula notato. Tourn. Inst.* 393. American Bitter Vetch with a scarlet Fruit, marked with a black Spot, commonly called wild Liquorice in the *West-Indies*.

4. GLYCINE foliis ternatis bifidis, racemis lateralibus. *Lin. Sp. Pl.* 754. Glycine with hairy trifoliate Leaves, and Flowers growing in long Bunches from the Sides of the Stalks. *Phaseolus Marianus scandens, floribus comosis. Pet. Mus.* 453. Climbing Kidney Bean of Maryland, with spiked Flowers.

5. GLYCINE foliis ternatis tomentosis, racemis axillaribus brevissimis, leguminibus dispermis. *Lin. Sp. Pl.* 754. Glycine with woolly trifoliate Leaves, very short Spikes of Flowers proceeding from the Sides of the Stalks, with Pods containing two Seeds. *Anonis phaseoloides scandens, floribus flavis sessilibus. Hort. Elth.* 30. Tab. 26. Climbing Rest Harrow like Kidney Bean, with yellow Flowers sitting close to the Stalks.

The 1st Sort grows naturally in *Virginia*; this hath Roots composed of several Knobs, or Tubers, which hang to each other by small Strings; from these come out in the Spring slender twining Stalks, which rise to the Height of 8 or 10 Feet, garnished with winged Leaves, composed of 3 Pair of oval Spear-shaped Lobes, terminated by an odd one. The Flowers come out in short Spikes from the Side of the Stalks; they are of a Pea Blossom Kind, of a dirty Flesh Colour, having little Scent. This appears in *August*, but does not produce Seeds in *England*. The Stalks decay in Autumn, but the Roots continue; this is propagated by parting the Roots, each of the Tubers being separated from the principal Root, will grow; the best Time for this is about the End of *March*, or Beginning of *April*, before they put out Shoots. The Roots should be planted in a warm Situation, and covered in hard Frost, otherwise they will not live abroad in this Country; where they have been planted against a South Wall, they have thriven and flowered extremely well, which they seldom do in any other Situation; and those Roots which are planted in Pots rarely flower, nor do their Stalks rise

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near so high as those planted in the full Ground; some ignorant Persons call this the *Twickenham* Climber.

The 2d Sort was brought from *Carolina*, but has been since observed in *Virginia*, and some other Places in *North America*; this Sort has woody Stalks, which twist themselves together, and twine round any Trees that grow near, and will rise to the Height of 15 Feet, or more. The Leaves are winged, and in Shape somewhat like the Ash Tree, but have a greater Number of *Pinnæ*. The Flowers are produced from the Wings of the Leaves, which are of a purple Colour; these are succeeded by long cylindrical Pods, shaped like those of the scarlet Kidney Bean, containing several Kidney-shaped Seeds, but these are never perfected in *England*.

This climbing Shrub is propagated in several Nurseries near *London*, where it is known by the Name of *Carolina* Kidney Bean Tree. It is increased by laying down the young Branches in *October*, which will be rooted well by that Time Twelvemonth (especially if they are duly watered in dry Weather), and may then be transplanted either in a Nursery for a Year to get Strength, or to the Place where they are to remain for good, which should be in a warm light Soil, and a sheltered Situation, where they will endure the Cold of our ordinary Winters very well; and if their Roots are covered with Straw, Fern, Peas Haulm, or any other light Covering, there will be no Danger of their being destroyed by the Frost.

The 3d Sort grows naturally in both *Indies*, and also in *Egypt*. This is a perennial Plant, with slender twining Stalks, which twist round any neighbouring Support, and rise to the Height of 8 or 10 Feet, and are garnished with winged Leaves, composed of 16 Pair of oblong blunt Lobes, set close together; these have the Taste of Liquorice, from whence the Inhabitants of the *West-Indies* have given it the Name of Wild Liquorice, and use the Herb for the same Purpose as Liquorice in *Europe*. The Flowers are produced from the Side of the Stalks in short Spikes or Bunches; they are of a pale purple Colour, and shaped like those of the Kidney Bean; they are succeeded by short Pods, each containing 3 or 4 hard round Seeds of a scarlet Colour, with a black Spot or Eye on that Side which is fastened to the Pod. The Seeds of this Plant are frequently strung, and worn as Ornaments by the Natives of those Countries, where they grow naturally; they are frequently brought to *England* from the *West-Indies*, and wrought into various Forms, with Shells and other hard Seeds.

This Plant is propagated by Seeds, which must be sown on a good hot Bed in the Spring; but as the Seeds are very hard, unless they are soaked in Water 12 or 14 Hours before they are sown, they frequently lie in the Ground a whole Year before they vegetate; but when soaked, the Plants will appear in a Fortnight, if they are good, and the Bed in a proper Temperature of Heat. When the Plants are 2 Inches high, they should be each transplanted into a separate Pot, filled with light Earth, and plunged into a hot Bed of Tanners Bark, where they should be shaded from the Sun till they have taken new Root; after which they must be treated as other tender Plants from the same Countries, always keeping them in the Bark Stove, for they are too tender to thrive in any other Situation in *England*. This Sort will flower the 2d Year from Seeds, and sometimes ripens Seeds here.

There are 2 other Varieties of this Plant, one with a white, and the other a yellow Seed, but the Plants do not differ from the other in Leaf or Stalk; but as these have not as yet flowered in *England*, so I do not know how their Flowers may differ.

The 4th Sort hath a perennial Root and an annual Stalk, which decays in Autumn. This rises from 2 to 3 Feet high, with slender herbaceous Stalks, garnished with trifoliate hairy Leaves, sitting close to the Stalks; the small Leaves or Lobes, are of the oval Spear Shape, ending in acute Points. The Flowers come out from the Side of the Stalks, at the Foot Stalk of the Leaves; the naked Part of the Foot Stalk is about 2 Inches long, and the Spike of Flowers about the same Length, and recurved; the Flowers are of the Pea Blossom Kind, sitting close together. They are small, and of a fine blue Colour, coming out the Beginning of *June*, and are sometimes succeeded by Seeds in *England*, which ripen in *August*.

This Sort grows naturally in *North America*, and is hardy enough to live in the open Air in *England*. It may be propagated by Seeds, or parting the Roots; the former is the best Method, where good Seeds can be obtained: These may be sown on a Bed of light Earth in Spring, and if the Season prove dry, must be frequently refreshed with Water, otherwise they will remain a long Time in the Ground before they vegetate; when the Plants come up, they must be kept clean from Weeds in Summer, and in Autumn when their Stalks are decayed, if some rotten Tanners Bark is spread over the Surface of the Ground, it will protect the Roots from being injured by the Frost. In the Spring, the Roots should be transplanted to the Places where they are to remain, which must be in a warm sheltered Situation, but not too much exposed to the Sun, and a light Soil, where they will thrive and produce Flowers annually. If this is propagated by parting the Roots, it should be done in Spring, before the Roots begin to shoot, which is the best Season for transplanting them: But these Roots should not be parted oftener than every 3d Year, for if they are often removed, they will not flower so strong.

The 5th Sort hath a perennial Root, and an annual climbing Stalk, which rises near 4 Feet high, garnished with woolly trifoliate Leaves: The Flowers come out in short Bunches from the Side of the Stalks, they are small, of a yellow Colour, and are succeeded by short Pods, which contain two roundish Seeds in each. This flowers in *June*, and the Seeds ripen in Autumn. It grows naturally in *Virginia*, but will live in the open Air in *England*, if planted in a sheltered Situation. This is propagated, and requires the same Treatment as the 4th Sort.

GLYCYRRHIZA. *Lin. Gen. Pl.* 788. *Tourn. Inst. R. H.* 389. *Tab.* 210. Liquorice; in French, *Reglisse*.

The Characters are,

The Flower hath a permanent Empalement of 1 Leaf, which is tubulous, and divided into 2 Lips; the upper Lip is cut into 3 Parts, the middle one being broad and bifid, the under Lip single. The Flower hath 4 Petals, is of the Butterfly Kind, having a long erect Standard, with oblong Wings, and a 2-leaved Keel which is acute. It hath 10 Stamina, 9 joined and 1 standing single; they are erect above the Keel, and terminated by roundish Summits. In the Bottom is situated a short Germen, supporting an Awl-shaped.

shaped Style the Length of the Stamina, crowned by a rising obtuse Stigma. The Germen afterward becomes an oblong, or oval compressed Pod with one Cell, including 2 or 3 Kidney-shaped Seeds.

The Species are,

1. GLYCRRHIZA *leguminibus glabris*. Hort. Cliff.
490. Liquorice with smooth Pods. *Glycyrrhiza siliquosa*, vel *G. fmanica*. C. B. P. Common Liquorice.

2. GLYCRRHIZA *leguminibus ebinatis*. Prod. Leyd.
386. Liquorice with prickly Pods. *Glycyrrhiza capite ebinato*. C. B. P. Rough podded Liquorice.

3. GLYCRRHIZA *leguminibus hirsutis*. Prod. Leyd.
386. Liquorice with hairy Pods. This is the *Glycyrrhiza Orientalis*, *siliquis hirsutissimis*. Journ. Cor. Eastern Liquorice, with hairy Pods.

The 1st Sort is that commonly cultivated in England for Medicine; the other 2 Kinds are preserved in curious Botanick Gardens for Variety, but their Roots are not so full of Juice as the 1st, nor is the Juice so sweet; though the 2d Sort seems to be that which *Dioscorides* has described and recommended; but I suppose the Goodness of the first has occasioned its being so generally cultivated in Europe.

The Roots of this run very deep into the Ground, and creep to a considerable Distance, especially where permitted to stand long unremoved; from these arise strong herbaceous Stalks, 4 or 5 Feet high, and garnished with winged Leaves, composed of 4 or 5 Pair of oval Lobes, terminated by an odd one, the Leaves and Stalks are clammy, and of a dark green; the Flowers come out in Spikes from the Wings of the Stalks, standing erect; they are of a pale blue Colour, and succeeded by short compressed Pods, each containing 2 or 3 Kidney-shaped Seeds. It flowers the latter End of July, but the Seeds do not ripen in England.

This Plant delights in a rich light sandy Soil, which should be 3 Feet deep at least, for the Goodness of Liquorice consists in the Length of the Roots: The greatest Quantity of Liquorice propagated in England, is about *Pontefract* in *Yorkshire*, and *Godalmin* in *Surry*; though of late Years, there hath been a great deal cultivated in the Gardens near *London*: The Ground in which you intend to plant Liquorice, should be well dug and dunged the Year before you plant it, that the Dung may be perfectly rotted, and mixed with the Earth, otherwise it will be apt to stop the Roots from running down; and before you plant it, the Ground should be dug 3 Spades deep, and laid very light; when your Ground is thus well prepared, you should furnish yourself with fresh Plants taken from the Sides or Heads of the old Roots, observing that they have a good Bud or Eye, otherwise they are subject to miscarry; these Plants should be about 10 Inches long, and perfectly sound.

The best Season for planting them is towards the End of February, or Beginning of March, which must be done in the following Manner, viz. First strain a Line cross the Ground in which you would plant them, then with a long Dibble made on Purpose, put in the Shoot, so that the whole Plant may be set strait into the Ground, with the Head about an Inch under the Surface in a strait Line, about a Foot asunder, or more, in Rows, and two Feet Distance Row from Row; and after having finished the whole Spot of Ground, you may sow a thin Crop of Onions, which, being Plants

that do not root deep into the Ground, nor spread much above Ground, will do the Liquorice no Damage the first Year; for the Liquorice will not shoot very high the first Season, and Hoeing the Onions will also keep the Ground clear from Weeds; but in doing this you must be careful not to cut off the top Shoots of the Liquorice Plants, as they appear above Ground, which would greatly injure them; and also observe to cut up all the Onions which grow near the Heads of the Liquorice; and after your Onions are pulled up, you should carefully hoe and clean the Ground from Weeds; and in October, when the Shoots of the Liquorice are decayed, spread a little very rotten Dung on the Surface of the Ground, which will prevent the Weeds from growing during the Winter, and the Rain will wash the Virtue of the Dung into the Ground, which will greatly improve the Plants.

In the Beginning of March following you should slightly dig the Ground between the Rows of Liquorice, burying the remaining Part of the Dung; but in doing of this, you should be very careful not to cut the Roots. This stirring of the Ground will not only preserve it clean from Weeds a long Time, but greatly strengthen the Plants.

The Distance which I have allowed for planting them, will, I doubt not, by some, be thought too great; but in Answer to that, I would only observe, that as the Largeness of the Roots is the chief Advantage to the Planter, so the only Method to obtain this, is by giving them Room; and besides, this will give a greater Liberty to stir and dress the Ground, which is of great Service to Liquorice; and if the Plantation designed were to be of an extraordinary Bigness, I would advise the Rows to be made at least 3 Feet distant, whereby it will be easy to stir the Ground with a Breast Plough, which will greatly lessen the Expence of Labour.

These Plants should remain 3 Years from the Time of planting, when they will be fit to take up for Use; which should not be done until the Stalks are perfectly decayed, for when it is taken up too soon, it is subject to shrink greatly, and lose of its Weight.

The Ground near *London* being rich, increases the Bulk of the Root very fast; but when it is taken up, it appears of a very dark Colour, and not near so lightly as that which grows on a sandy Soil in an open Country.

The 2d Sort grows naturally in some Parts of *Italy*, and in the *Levant*; the Stalks and Leaves of this are very like those of the first, but the Flowers are produced in shorter Spikes, and the Pods which succeed them are very short, broad at their Base, ending in acute Points, and armed with sharp Prickles. This flowers about the same Time as the first, and in warm Seasons will perfect Seeds in England.

The 3d Sort grows naturally in the *Levant*, from whence the Seeds were sent to the Royal Garden at *Paris*, by Dr. *Tournefort*. This hath much the Appearance of the other two Species, but the Pods of it are hairy, and longer than those of the other. Both these Sorts may be propagated in the same Manner as the first, or from Seeds, which may be sown in the Spring on a Bed of light Earth; but as neither of these are used, so they are seldom propagated unless for Variety.

GNAPHALIUM. Lin. Gen. Pl. 850. *Elichrisum*.

X x x 2

Tourn.

Tourn. Inst. R. H. 452. Tab. 259. Goldylocks, or Eternal Flower; in French, Immortelle.

The Characters are,

It hath a compound Flower, made up of hermaphrodite Florets and female half Florets, included in 1 scaly Empalement; the hermaphrodite Florets are tubulous, Funnel-shaped, and cut into 5 Parts at the Brim, which are reflexed; these have 5 short hairy Stamina, terminated by cylindrical Summits. In the Center is situated a crowned Germen, supporting a slender Style the Length of the Stamina, crowned by a bifid Stigma; the Germen after-ward becomes a single Seed, which in some Species is crowned with a hairy Down, and in others a feathery Down. The female Flowers which are intermixed with these have no Stamina, but a crowned Germen supporting a slender Style, crowned by a bifid reflexed Stigma. These are in some Species fruitful, and in others barren. The Empalement of the Flower is permanent and shining.

The Species are,

1. *GNAPHALIUM tomentosum*, foliis caulinis linearibus, caule fruticoso, corymbo composito. Woolly Goldylocks with a shrubby Stalk garnished with very narrow Leaves, and a compound Corymbus of Flowers. *Elicbrysum seu fæcchas citrina angustifolia*. C. B. P. 264. Cassidony, or narrow-leaved Goldylocks.

2. *GNAPHALIUM foliis linearibus, caule fruticoso ramofo, corymbo composito*. Hort. Cliff. 401. Goldylocks with a branching shrubby Stalk, having very narrow Leaves, and a compound Corymbus of Flowers. *Elicbrysum angustissimum folio*. Tourn. Inst. R. H. 452. Goldylocks with very narrow Leaves.

3. *GNAPHALIUM foliis alternis, acutè dentatis, subtus villosis, pedunculis longissimis unifloris*. Goldylocks with alternate Leaves sharply indented, woolly on their under Side, with very long Foot Stalks sustaining one Flower. *Elicbrysum sylvestre latifolium, flore parvo singulari*. Tourn. Inst. R. H. 452. Broad leaved wild Goldylocks, with a single small Flower.

4. *GNAPHALIUM foliis semiamplexicaulibus ensiformibus, repandis obtusis, utrinque pubescentibus, floribus conglomeratis*. Prod. Leyd. 149. Goldylocks with Sword-shaped Leaves half embracing the Stalks, obtuse, reflexed, and woolly on both Sides, and Flowers growing in Clusters. *Elicbrysum sylvestre latifolium capitulis conglomeratis*. C. B. P. 264. Broad leaved wild Goldylocks, with Heads growing in Clusters.

5. *GNAPHALIUM caule ramofo diffuso, floribus confertis terminalibus*. Flor. Lapp. 300. Goldylocks with a diffused branching Stalk, and Flowers in Clusters at the Top. *Elicbrysum aquaticum, ramofo, minus, capitulis foliaceis*. Tourn. Inst. 452. Lesser branching aquatick Goldylocks with leafy Heads.

6. *GNAPHALIUM caule simplicissimo, floribus sparsis*. Flor. Lapp. 298. Goldylocks with a single Stalk, and Flowers growing sparsedly. This is the *Elicbrysum spicatum*. Tourn. Inst. R. H. 453. Spiked Goldylocks.

7. *GNAPHALIUM caule simplicissimo corymbo simplici terminali, sarmentis procumbentibus*. Hort. Cliff. 400. Goldylocks with a single Stalk terminated by a single Corymbus, and trailing Branches. *Elicbrysum montanum flore rotundiori candido*. Tourn. Inst. R. H. 453. Mountain Goldylocks with a rounder white Flower.

8. *GNAPHALIUM foliis radicalibus, cuneiformibus, caulinis acutis sessilibus, caule simplicissimo, capitulo terminali apbyllo, floribus oblongis*. Goldylocks with the lower Leaves Wedge-shaped, those on the Stalks acute, and sitting close, a single Stalk without Leaves, terminated by oblong Flowers. *Elicbrysum montanum longiore & folio & flore albo*. Tourn. Inst. 453. Mountain Goldylocks, with a longer Leaf and white Flower.

9. *GNAPHALIUM bumile, caule suffruticoso, foliis linearibus subtus argenteis, squamis calycinis longioribus acuminatis*: Low Goldylocks with a shrubby Stalk, very narrow Leaves, silvery on their under Side, and longer acute pointed Scales to the Empalement. *Chamaebryocoma prælongis purpurascensibusque Jacæ capitulis*. Barrel. Icon. 406. Dwarf Goldylocks with longer and purplish Heads like Napweed.

10. *GNAPHALIUM foliis confertis angusto-lanceolatis, caule fruticoso, corymbo composito*. Hort. Cliff. 402. Goldylocks with narrow Spear-shaped Leaves growing in Clusters, a shrubby Stalk, and compound Corymbus. *Elicbrysum Orientale*. C. B. P. 264. Eastern Goldylocks called Immortal Flower.

11. *GNAPHALIUM foliis lineari-lanceolatis obtusis, utrinque tomentosis, caule ramofo, corymbo composito terminali*. Goldylocks with narrow Spear-shaped obtuse Leaves, woolly on both Sides, and a branching Stalk terminated by a compound Corymbus of Flowers. *Elicbrysum Germanicum, calyce ex aureo rutilante*. Tourn. Inst. R. H. 452. German Goldylocks having a reddish Gold coloured Empalement.

12. *GNAPHALIUM foliis lineari-lanceolatis acuminatis, alternis, caule supernè ramofo corymbis fastigiatis*. Hort. Cliff. 401. Goldylocks with narrow Spear-shaped pointed Leaves placed alternate, the upper Part of the Stalk branching, with a compact Corymbus of Flowers. *Elicbrysum Americanum latifolium*. Tourn. Inst. R. H. 453. Broad leaved American Goldylocks.

13. *GNAPHALIUM foliis amplexicaulibus, ovatis, nervosis, utrinque lanuginosis*. Lin. Sp. Pl. 850. Goldylocks with oval nervous Leaves embracing the Stalks, downy on both Sides. *Elicbrysum Africanum sætidissimum, amplissimo folio*. Tourn. Inst. R. H. 454. Most stinking African Goldylocks with a large Leaf.

14. *GNAPHALIUM foliis amplexicaulibus integerrimis acutis, subtus tomentosis, caule ramofo*. Hort. Cliff. 402. Goldylocks with entire acute Leaves embracing the Stalks, woolly on their under Side, and a branching Stalk. *Elicbrysum Africanum sætidissimum amplissimo folio calice argenteo*. Tourn. Inst. 454. Most stinking African Goldylocks, with a very large Leaf, and silvery Empalement to the Flower.

15. *GNAPHALIUM foliis decurrentibus acutis, undatis, subtus tomentosis, caule ramofo*. Hort. Cliff. 402. Goldylocks with acute running Leaves which are waved, woolly on their under Side, and a branching Stalk. *Elicbrysum grævolens acutifolium, caule alato*. Hort. Elth. 130. Stinking Goldylocks, with an acute Leaf and winged Stalk.

16. *GNAPHALIUM foliis lanceolatis semiamplexicaulibus, caule infernè ramofo terminali*. Hort. Cliff. 401. Goldylocks with Spear-shaped Leaves embracing the Stalks, and the under Branches terminated with Flowers. *Elicbrysum Africanum folio oblongo, subtus incano, supra viridi*,

viridi, flore luteo. Boerb. Ind. alt. 1. 121. African Goldylocks with an oblong Leaf, hoary on the under Side, and green above, with a yellow Flower.

17. *GNAPHALIUM caule herbaceo simplicissimo, foliis lanceolatis obtusis tomentosis, floribus spicatis lateralibusque.* Goldylocks with a single herbaceous Stalk, obtuse Spear-shaped woolly Leaves, and Flowers growing in Spikes from the Sides of the Stalks. *Gnaphalium ad stæcadem citrinam accedens. Sloan. Cat. Fam. 125. Cudweed like golden Cassidony.*

18. *GNAPHALIUM foliis lineari-lanceolatis, caule infernè ramofo, corymbo composito terminali. Hort. Cliff. 401.* Goldylocks with narrow Spear-shaped Leaves, the under Part of the Stalk branching, and a compound Corymbus terminating the Branches. *Elicbrysum Africanum, folio oblongo angusto, flore rubello postea aureo. Boerb. Ind. alt. 121. African Goldylocks with an oblong narrow Leaf and a reddish Flower, which is afterwards yellow.*

19. *GNAPHALIUM foliis linearibus tomentosis, integerrimis sessilibus, corymbis alternis conglobatis, floribus globosis. Prod. Leyd. 149.* Goldylocks with narrow woolly entire Leaves sitting close to the Stalks, and globular Flowers joined close in Heads placed alternate. *Elicbrysum flore suave rubente. Boerb. Ind. alt. 1. 120.* Goldylocks with a sweetly red Flower.

20. *GNAPHALIUM fruticosum, foliis infernè lanceolatis caulinis lineari-lanceolatis, utrinque tomentosis, corymbo composito terminali.* Shrubby Goldylocks with the under Leaves Spear-shaped, those on the Stalks narrow, Spear-shaped, and woolly on both Sides, and the Stalks terminated by a Corymbus of Flowers. *Elicbrysum Africanum frutescens, angustis & longioribus foliis incanis. Hort. Amst. 2. p. 109.* Shrubby African Goldylocks with longer and narrower Leaves, which are hoary.

21. *GNAPHALIUM foliis decurrentibus obtusis infernè villosis, corymbis conglobatis terminalibus.* Goldylocks with obtuse running Leaves, hoary on their under Side, and a clustered Corymbus of Flowers terminating the Stalk. *Elicbrysum foliis linearibus decurrentibus, subtus incanis, floribus corymbosis. Fig. Plant. Tab. 131. fol. 2.* Goldylocks with narrow running Leaves, hoary on their under Side, and Flowers growing in a Corymbus.

22. *GNAPHALIUM caule simplicissimo, foliis radicalibus ovatis maximis, sarmentis procumbentibus. Lin. Sp. Pl. 850.* Goldylocks with a simple Stalk, very large oval Leaves at Bottom, and trailing Runners. *Gnaphalium plantaginifolio, Virginianum. Pluk. Alm. 171. Virginia Goldylocks with a Plaintain Leaf.*

23. *GNAPHALIUM foliis lanceolatis, caule tomentoso ramofo, floribus terminalibus glomeratis conicis. Lin. Sp. Plant. 851.* Goldylocks with Spear-shaped Leaves, a branching woolly Stalk, terminated by a conical Cluster of Flowers. *Elicbrysum obtusifolium, capitulis argenteis conglobatis. Hort. Eltzb. 130.* Blunt leaved Goldylocks, with silvery Heads growing in Clusters.

24. *GNAPHALIUM foliis lanceolatis decurrentibus tomentosis, floribus spicatis terminalibus lateralibusque.* Goldylocks with Spear-shaped woolly running Leaves, and Flowers growing in Spikes at the Ends and Sides of the Stalks. *Helicbrysum caule alato, floribus spicatis.*

Sloan. Cat. Fam. 125. Goldylocks with a winged Stalk and spiked Flowers.

The 1st Sort hath a shrubby Stalk, which rises about 3 Feet high, branching out into long slender Stalks irregularly; the lower Branches are garnished with obtuse Leaves, 2 Inches and Half long, and an Eighth of an Inch broad at the Point, but those on the Flower Stalks are very narrow, ending in acute Points; the whole Plant is very woolly, the Flowers terminate the Stalks, in a compound Corymbus; their Empalements are of a silvery Colour at first, and very neat, but afterwards turn of a yellowish Sulphur Colour. If these are gathered before the Flowers are much opened, the Heads will continue in Beauty many Years, especially if kept from the Air and Duit. The Plants begin to flower in June, and there is a Succession of Flowers all the Summer, some of which will continue in Beauty most Part of the Winter. This is generally supposed to be the true golden Cassidony of the Shop, but the 2d Sort is usually substituted for it England.

It is propagated by Slips or Cuttings, which may be planted in June or July, in a Bed of light Earth, and covered with Glasses, or shaded with Mats, observing to refresh them frequently with Water, but not in large Quantities; these Cuttings will put out Roots in a Month or five Weeks, then they should be taken up and planted in Pots filled with light Earth, and placed in a shady Situation till they have taken new Root, when they may be removed to an open Situation, and placed among other hardy Exoticks, till about the Middle or End of October; at which Time they should be placed under a common Frame, where they may be protected from Frost, but in mild Weather be exposed to the open Air. With this Management, in Winter, the Plants will be much stronger than those kept in the Green-house, where they generally draw too weak; for this Sort only wants to be sheltered from hard Frost, being so hardy as in very mild Winters to live abroad in warm Borders near Walls, with little Shelter.

The 2d Sort hath a shrubby Stalk, which divides into many slender Branches, covered with a white Bark; these form a thick bushy under Shrub, and rise near 3 Feet high, garnished with very narrow Leaves, hoary on their under Side, but green on their upper, placed without Order on every Side the Stalks; the Flowers are produced in a compound Corymbus at the End of the Branches; their Heads are small, and of a yellow Colour when fully blown; these are continued in Succession most Part of Summer. This grows naturally in France and Germany, and is hardy enough to live in the open Air in England. It is propagated by slips or Cuttings, which may be planted in a shady Border during any of the Summer Months, and in the Autumn transplanted where they are designed to remain. This should have a dry undunged Soil, in which it is rarely injured by the most severe Frost.

The 3d Sort is an annual Plant, which grows naturally in Italy and Sicily; this hath an herbaceous Stalk, little more than a Foot high, garnished with acute indented Leaves, hoary on their under Side; the Flowers stand on long Foot Stalks, which rise far above the Branches, each sustaining one small whitish Flower. These appear in July, and the Seeds ripen in September. It

is propagated by Seeds which should be sown on a Bed of light Earth, where the Plants are designed to remain; and when they come up, should be thinned where too close, and kept clean from Weeds, which is all the Culture they require.

The 4th Sort is an annual Plant with woolly Leaves, which rises with woolly Stalks about 8 Inches high, garnished with oblong Leaves which embrace the Stalks with their Base; the Flowers grow in close Clusters, at the Top and from the Side of their Stalks, which are included in dry silvery Empalements.

There is another Species of this with narrower Leaves, not quite so woolly; the Stalks rise higher, and are more branched; the Flowers grow in close Bunches on the Top of the Stalks, and are of a pale yellow.

Both these Sorts will come up better from the scattered Seeds, than when sown by Art; but if the Seeds are sown, it must be soon after they are ripe, otherwise they will not succeed. The Plants require no other Care, but to be kept clean from Weeds, and thinned where too close. They flower in *July*, and the Seeds ripen in Autumn.

The 5th Sort is an annual, which grows in many Parts of *England*, on Places covered with Water in the Winter; this is a low branching Plant with silvery Leaves and dark Heads of Flowers, but being of no Use is not cultivated in Gardens.

The 6th Sort is also an annual, with narrow Leaves, hoary on their under Side; the Stalks grow erect about a Foot high, and at every Joint is produced a short Spike of white Flowers. This is found growing naturally in some Parts of *England*, so is not often admitted into Gardens. If the Seeds of this Sort are permitted to scatter, the Plants will come up in Spring with greater Certainty than if sown, and they will require no Culture. These flower in *July*, and the Plants decay soon after they have ripened their Seeds.

The 7th Sort grows naturally in the northern Parts of *England*, on the Tops of Hills and Mountains, where the Shoots which are sent out from every Side of the Plant put out Roots, whereby it is propagated in great Plenty: The Leaves of this grow close to the Ground, are narrow at their Base, but rounded at their End, where they are broad; they are not an Inch long, and hoary on their under Side; the Stalks are single, about 4 Inches high, terminated by a single Corymbus of Flowers. This flowers in *May* and *June*.

There are two Varieties of this, one with a purple and the other a variegated Flower, which have risen accidentally from Seeds, but continue their Difference in the Gardens. They are easily propagated by Offsets, which should be planted in Autumn, in a shady Situation, where they will require no other Care but to be kept clean from Weeds. This Plant is called *Pes Catii*, or Catsfoot.

The 8th Sort grows naturally on the *Alps*. This is a low Plant, with under Leaves like the last mentioned; the Stalks are single, and about 6 Inches high; they are garnished with very small acute Leaves, and terminated by 4 or 5 oblong Flowers, which in some Plants are white, and in others of a purplish Colour. They appear about the same Time as the former Sort, and the Plants may be propagated and treated in the same Manner.

The 9th Sort grows naturally in *Spain* and *Italy*. This is a low Plant with a ligneous Stalk, which seldom rises more than 6 Inches high, garnished with very narrow Leaves, white on their under Side; the Flowers are produced from the Side of the Stalks, each standing on a separate Stalk; their Empalements are scaly and long, ending in acute stiff Points, and are of a purplish Colour. This Sort flowers in *July*, but seldom perfects Seeds in this Country.

The 10th Sort is supposed to have been brought first from *India* to *Portugal*, where it has been long propagated for the Beauty of its golden Heads of Flowers, which, if gathered before they are too open, will continue in Beauty several Years; so that in the Winter Season, they ornament their Churches with these Flowers, and many of them are annually brought to *England*, and sold for Ornaments to the Ladies. These Plants have a short shrubby Stalk, seldom rising more than 3 or 4 Inches high, putting out many Heads; the Leaves are narrow and woolly on both Sides, and come out without Order; the Flower Stalks arise from these Heads; these grow 8 or 10 Inches high, are garnished all the Way with narrow hoary Leaves, and terminated by a compound Corymbus of bright yellow Flowers, with large Heads. These begin to flower in *May*, and there is a Succession of them most Part of Summer. This is propagated by slipping off the Heads during any of the Summer Months, and after stripping off the lower Leaves, they should be planted in a Bed of light Earth, covering them with Hand Glasses, which must be shaded every Day when the Sun is warm; and the Cuttings must be supplied with Water frequently, but not in too great Quantities; when these are rooted, they should be planted in Pots, and treated as hath been directed for the first Sort. These Plants in mild Winters will live abroad in a very warm Border with very little Shelter, and the hardier they are treated, the greater Number of Flowers they will produce; for when they are drawn weak in a Green-house, they never flower so strong.

The 11th Sort hath very woolly Stalks and Leaves, much longer than those of the tenth; the Stalks rise a Foot high, sending out a few Side Branches; these are terminated by a compound Corymbus of Flowers, whose Heads are small, and of a Gold Colour, changing a little red as they fade. This is propagated by Slips as the last mentioned, but the Plants will live in the open Air, if planted on a dry Soil.

The 12th Sort grows naturally in *North America*, but has been long in the *English* Gardens. This hath a creeping Root, which spreads far in the Ground, so as to become a troublesome Weed very often, unless kept within Bounds; the Stalks are woolly, rising a Foot and a Half high, garnished with long Leaves ending in acute Points, placed alternate, and woolly on their under Side; the upper Part of the Stalk branches into 2 or 3 Divisions, each being terminated by a close Corymbus of Flowers, with pretty large silvery Empalements, which, if gathered and properly dried, will retain their Beauty several Years. This Sort will thrive in almost any Soil or Situation, and is easily propagated by its creeping Roots. It flowers in *June* and *July*, and the Stalks decay in Autumn.

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The 13th Sort grows naturally at the *Cape of Good Hope*. This is an annual Plant, which sends out many oblong blunt Leaves near the Root; the Stalks rise a Foot and a Half high, garnished with Leaves placed alternate, which are broad at their Base where they embrace the Stalks, but end in acute Points; they are woolly, and when handled, emit a very rank Odour; the Stalks are terminated by a Corymbus of Flowers, in large silvery Empalements, which will retain their Beauty several Years.

The 14th Sort grows naturally at the *Cape of Good Hope*, and is an annual Plant, very like the former, but the Leaves are of a yellowish green on their upper Side, and woolly on their under; the Stalks branch, and the Heads of Flowers are of a bright yellow Colour, and these Differences are permanent.

Both these Plants are propagated by Seeds, which, if sown in Autumn on a warm Border, will more certainly succeed, than when sown in Spring; or if the Seeds are permitted to scatter, the Plants will come up without Care, and may be transplanted while young, to the Places where they are to remain; when the Plants have taken Root, they will require no other Care, but to be kept clean from Weeds. They flower in *July*, and the Seeds ripen in Autumn.

The 15th Sort grows in *Africa*, and *North America*; from both these Countries I have received the Seeds. It is an annual Plant, with oblong Leaves at the Bottom, a little waved, and hoary on their under Side. The Stalks rise about a Foot high, and are garnished with acute pointed Leaves; from their Base runs a Border or Wing along the Stalk; the whole Plant has a disagreeable Odour. The Flowers grow in a Corymbus on the Top of the Stalks, are white, and appear in *July*. The Seeds ripen in Autumn, and if permitted to scatter, the Plants, will come up without Care, as the two former Sorts.

The 16th Sort rises with a shrubby Stalk 3 or 4 Feet high, sending out many Branches from the lower Part, garnished with narrow Spear-shaped Leaves, which half embrace the Stalks with their Base; they are of a dark green on their upper Side, but hoary on their under; the Stalks are terminated by a compound Corymbus of yellow Flowers, whose Heads are small: These continue in Succession great Part of the Summer, but are rarely succeeded by Seeds in *England*. It is easily propagated by Cuttings in any of the Summer Months, which may be planted in a shady Border, and duly watered. These will take Root in a Month or 5 Weeks, and may then be taken up and planted in Pots, placing them in a shady Situation till they have taken fresh Root; then they may be removed to a sheltered Situation, and placed with other hardy Green-house Plants till Autumn, when they must be carried into the Green-house, where, during the Winter Season, they should have as much free Air as possible in mild Weather, for they only require Protection from Frost, so they should be treated as other hardy Green-house Plants.

The 17th Sort is an annual Plant, which grows in *France*, *Italy*, and *Spain*. This hath a woolly herbaceous Stalk, 6 or 8 Inches high, garnished with obtuse Spear-shaped woolly Leaves. The Flowers are pro-

duced in short Spikes from the Side, and at the Top of the Stalks; they are of a silvery Colour, and appear in *June* and *July*. The Seeds ripen in Autumn, which, if permitted to scatter, the Plants will come up without Care, and require no other Culture but to keep them clean from Weeds.

The 18th Sort grows naturally at the *Cape of Good Hope*; this rises with a slender shrubby Stalk, which sends out many lateral Branches below; these are garnished with very narrow Leaves, hoary on their under Side. The Flowers are produced in a compound Corymbus at the End of the Branches; they are at their first Appearance of a pale red, but afterward Change to a Gold Colour; the Empalements of this Sort are small, and dry like the other Species of this Genus. This Sort is propagated by Cuttings, as the 16th, and requires the same Treatment.

The 19th Sort grows naturally in *Isiria*. This is a perennial Plant, whose under Leaves spread on the Ground; these are obtuse, and woolly on their under Side; the Stalks rise about six Inches high; the Leaves upon these are narrow, ending in acute Points; the Stalks and Leaves are woolly, and at each of the Joints on the upper Part of the Stalks, is produced a compact Corymbus of Flowers, which are placed alternate on each Side, and the Stalk is terminated by a larger Corymbus sitting very close; these are of a fine soft red Colour, so make a pretty Appearance in the Month of *June*, when they are in Beauty.

This is propagated by Offsets from the Roots, as the 7th and 8th Sorts, but this doth not produce them in Plenty, so it is not very common in the *English* Gardens at present: It requires a drier Soil than the 7th, and a warmer Situation, but not too much exposed to the Mid-day Sun, so should be planted to an East Aspect, for it is rarely injured by the Cold in *England*.

The 20th Sort grows naturally at the *Cape of Good Hope*, but has been long in many curious Gardens in *Europe*. Dr. *Linnaeus* supposes this and the 10th to be but one Species, which he might easily be inclined to do, by seeing the dried Specimens only; for these seem only to differ in the Colour of their Flowers or Heads, which he never admits a specific Difference. Those who have observed the growing Plants, cannot doubt of their being two distinct Species; for the Stalks of this rise 3 or 4 Feet high, sending out several long irregular Branches, terminated by a compound Corymbus of Flowers; whereas the 10th Sort never rises with a Stalk, but the Heads sit close to the Ground, and the Flower Stalks rise single from the Heads, and never branch: The Heads of this 20th Sort are composed of Leaves, much longer than those of the 10th, and the Heads of the Flowers are of a bright Silver Colour. This is propagated by Cuttings, which should be planted and treated as hath been directed for the 10th Sort.

The 21st Sort was raised from Seeds in the *Chelsea* Garden, which came from the *Cape of Good Hope*; the lower Leaves of this are oblong and blunt. The Stalks are shrubby, and divide into many irregular Branches, which rise about 3 Feet high; these are garnished with oblong blunt-pointed Leaves, hoary on their under Side, but of a dark green above; from the Base of the Leaves runs a Border along the Stalk, like a Wing, of the same

Consistence

Consistence with the Leaves, so is what the former Botanists termed a winged Stalk, but Dr. *Linnaeus* calls it a running Leaf. The Stalks are terminated by a compound Corymbus of Flowers, very closely joined together, and of a bright Gold Colour, but the Flowers are small, and change to a darker Colour as they fade; there is a Succession of these Flowers most Part of the Summer, and the early Flowers are frequently succeeded by Seeds in *England*. This Sort may be propagated by Slips, or Cuttings, and the Plants treated as the 10th.

The 22d Sort grows naturally in *North America*, from whence the Seeds have been brought to *England*; this is a perennial Plant, whose lower Leaves are large and oval; from the main Stalk there come out Runners, which take Root in the Ground, and have young Plants at their Extremity. The Stalks are single, and garnished with narrower woolly Leaves, placed alternate. The Flowers are produced at the Top of the Stalks in a Corymbus; they are of a white Colour, and small. They appear in *June* and *July*, and sometimes are succeeded by Seeds, but the Plants propagate so fast by Off-sets, that the Seeds are little regarded; this will thrive in the open Air, if planted in a dry Soil and warm Situation.

The 23d Sort grows naturally in *North America*; it is an annual Plant with woolly obtuse Leaves. The Stalks are single, and rise about 9 Inches high. The Flowers grow in Spikes from the Side of the Stalks; they are a dirty white, so make no great Appearance. If the Seeds of this are permitted to scatter, the Plants will rise without Trouble, and only require to be kept clean from Weeds.

The 24th Sort grows naturally in *Jamaica*, and other of the hot Parts of *America*; this rises with a shrubby Stalk, about 2 Feet high, garnished with Leaves about the Size and Shape of those of Sage, but woolly on their under Side, and much veined; from the Base of each Leaf runs a Border along the Stalk. The Flowers are produced in Spikes from the Side, and at the End of the Stalk; these are long, and closely joined in the Spike. It flowers in *July* and *August*, but never perfects Seeds in *England*.

It is propagated by Seeds, which should be sown on a hot Bed in Pots, because the Plants do not often rise the same Year, therefore when it so happens, the Pots should be placed in the Stove in Winter, and the following Spring put upon a fresh hot Bed to bring up the Plants; when these appear, they must be planted into Pots, and kept constantly in the hot Bed, otherwise they will not thrive in *England*.

GNAPHALODES. See *Micropus*.

GOMPHRENA. *Lin. Gen. Pl.* 279. *Amarantoides*. *Tourn. Inst. R. H.* 654. *Tab.* 420.

The Characters are,

The Flower hath a large 3 leaved Empalement, coloured and permanent. The Petal is erect and cut into 5 Parts at Top; it hath a cylindrical tubulous Empalement, the Length of the Petal, cut into 5 small Parts at the Brim, which spread open; it hath 5 Stamina scarcely discernable, situated in the Brim of the Nectarium, terminated by Summits, shut up in the Mouth of the Nectarium. In the Center is situated an oval pointed Germen, with 2 small

Styles, crowned with single Stigmas, the Length of the Stamina. The Germen becomes one large roundish Seed, inclosed in a thin crusted Capsule with one Cell.

The Species are,

1. GOMPHRENA caule erecto, foliis ovato-lanceolatis, capitulis solitariis, pedunculis diphyllis. *Hort. Cliff.* 86. Gomphrena with an erect Stalk, oval Spear-shaped Leaves, single Heads, and Foot Stalks having two Leaves. *Amarantoides Lychnidis folio, capitulis purpureis*. *Tourn. Inst. R. H.* 654. Globe *Amaranthus* with purple Heads.

2. GOMPHRENA caule erecto, spica interrupta. *Prod. Leyd.* 419. Gomphrena with an erect Stalk, and an interrupted Spike of Flowers.

3. GOMPHRENA foliis lanceolatis, capitulis diphyllis, flosculis perianthio propria distinctis. *Lin. Sp. Pl.* 224. Gomphrena with Spear-shaped Leaves, two Leaves to the Heads, and each Floret having its proper Empalement. *Amarantoides perenne, floribus stramineis radiatis*. *Hort. Elth.* 24. *Tab.* 20. Perennial Globe *Amaranthus* with radiated Straw-coloured Flowers.

4. GOMPHRENA foliis carnosiss obtusis, capitulis oblongis terminalibus. *Lin. Sp. Pl.* 224. Gomphrena with obtuse fleshy Leaves, and oblong Heads terminating the Stalks. *Amarantoides humile Curassavicum, cepea foliis lucidis, capitulis albis*. *Herm. Par. Bat.* 15. *Tab.* 15. Low Globe *Amaranthus* of *Curassao* with shining Onion Leaves, and white Heads.

5. GOMPHRENA caule scandente, foliis ovato-lanceolatis, pedunculis nudis longissimis spica interrupta. Gomphrena with a climbing Stalk, oval Spear-shaped Leaves, very long naked Foot Stalks, and an interrupted Spike. *Amarantoides Lychnidis folio spicato, squamis herbaceis, flosculisque purpurascens*. *Houss. Mss.* Spiked *Amarantoides* with a Campion Leaf, herbaceous Scales, and purplish Flowers.

6. GOMPHRENA caule erecto, foliis lanceolatis, capitulis alaribus sessilibus. Gomphrena with an erect Stalk, Spear-shaped Leaves, and Heads on the Sides of the Stalks sitting close. *Amarantoides Lychnidis folio, capitulis argenteis minoribus foliorum alis prodeuntibus*. *Houss. Mss.* Globe *Amaranthus* with a Campion Leaf, and smaller silvery Heads proceeding from the Wings of the Leaves.

7. GOMPHRENA caule repente, capitulis rotundis sessilibus, foliis lanceolato-ovatis. *Lin. Sp. Pl.* 225. Gomphrena with a creeping Stalk, round Heads sitting close to the Stalks, and oval Spear-shaped Leaves. *Amarantoides marina repens, polygoni folio, capitulis argenteis*. *Plum. Cat.* 20. Creeping maritime Globe *Amaranthus* with a Knot Grass Leaf, and silvery Heads.

8. GOMPHRENA caule repente dichotomo villosa, foliis lanceolatis, capitulis alaribus sessilibus. Gomphrena with a creeping Stalk divided by Pairs, and hairy Spear-shaped Leaves, and Heads of Flowers sitting close to the Sides of the Stalks. *Amarantoides humile Curassavicum folio polygoni*. *Par. Bat. Prod.* 17. Low Globe *Amaranthus* of *Curassao*, with a Knot Grass Leaf.

9. GOMPHRENA caule procumbente, foliis inferioribus lanceolatis, superioribus rotundatis capitulis laxis terminalibus. Gomphrena with a trailing Stalk, the under Leaves Spear-shaped, the upper round, and loose Heads terminating the Stalks. *Amarantoides Lychnidis folio, capitulis*

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capitulis purpureis minoribus. Houst. Mff. Globe Amaranthus with a Campion Leaf, and smaller purple Heads.

10. *GMPHRENA pedunculis oppositis bifidis tricapitatis capitulo intermedio fissili. Lin. Sp. Pl. 224. Gomphrena with bifid opposite Foot Stalks, having three Heads; the Middle one sitting close to the Stalk. Amaranthoides Scandens Lychnidis folio, capitulis globosis flavescentibus. Houst. Mff. Climbing Globe Amaranthus with a Campion Leaf, and yellowish Heads of Flowers.*

The 1st Sort grows naturally in *India*, from whence the Seeds were brought to *Europe*, and the Plants have been many Years cultivated in all the curious Gardens; it is an annual Plant, which rises with an upright branching Stalk about 2 Feet high, garnished with Spear-shaped Leaves, placed opposite. The Branches also come out opposite, and the Foot Stalks of the Flowers, which are long and naked, with two short Leaves, close under each Head of Flowers. The Heads, at their first Appearance, are globular, but as they increase in Size, become oval; these are composed of dry scaly Leaves placed *Imbricatum* like the Scales of Fish; under each of these is situated a tubulous Flower, which just peeps out of the Covering, but these are not much regarded by the Generality of People, for the scaly Empalement which covers them is so beautiful, and these if gathered before they are too much faded, will retain their Beauty several Years. After the Flowers are past, the Germen, which is situated in the Bottom of each, becomes a large oval Seed, inclosed in a chaffy Covering, which ripens late in Autumn, and the Plant decays soon after.

There are two Varieties of this Sort, one with fine bright purple, the other hath white or silvery Heads, and these never alter from Seeds, so that they are permanent Varieties, though in other Respects they do not differ; there is also one with mixed Colours, but whether this arose accidentally from the Seeds of either of the former, I cannot determine, for this Variety continues from Seeds, and the other two I have cultivated more than 30 Years, and never found either of them vary.

There are also two Varieties of these which grow naturally in the *West Indies*, one with purple, and the other with white Heads, which are much smaller and rounder than those before-mentioned. The Plants grow much larger, and spread more into Branches, and they are later before the flower, so that in cold Seasons the Seeds rarely ripen in *England*; these are called Bachelors Buttons, by the Inhabitants of *America*, but whether they are specifically different from the others, I cannot with Certainty determine.

The 2d Sort hath much slenderer Stalks than the first, which grow taller, and are irregular. The Leaves are smaller, but of the same Shape. The Flowers grow in Spikes at the End of the Branches, which are broken or divided into 3 or 4 Parts, with Spaces between them. The Spikes are small, and of a pale purple Colour. The Seeds of this Sort were sent me by Dr. *Houssoun* from *Campeachy*.

The 3d Sort hath slender upright Stalks, garnished with Spear-shaped Leaves placed opposite; they are hairy, and sit close to the Stalks; these are hairy, and terminated by small Heads of Flowers, which spread

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open from each other, so that the Empalements appear distinct; these are of a pale Straw Colour, and appear in *July*. The Seeds, sometimes, will ripen in *England*, but the Plants will live 2 or 3 Years, if preserved in a Stove.

The 4th Sort hath creeping Stalks, which put out Roots at their Joints, as they trail on the Ground; these are garnished with narrow fleshy succulent Leaves, of a lucid green. The Flowers are produced on Foot Stalks, which grow at the End and Side of the Stalks; they are collected in small, oblong, silvery Heads, which have dry Empalements like the other Sorts. This grows naturally in most of the Islands of the *West-Indies*.

The 5th Sort hath a thick fleshy Root, which strikes deep into the Ground, from which arises an inclining Stalk, three or four Feet high, which requires Support, otherwise it will fall to the Ground. The Leaves grow by Pairs, opposite, and are oval Spear-shaped. The Foot Stalks of the Flowers are long and naked, and terminated by interrupted Spikes of Flowers, which are small, quinquefid, and of a purplish Colour; these are succeeded by single Seeds, wrapped up in a Down. It grows naturally at *La Vera Cruz*, in *New Spain*, from whence the late Dr. *Houssoun* sent the Seeds.

The 6th Sort grows naturally at *St. Helena*, from whence I received the Seeds; this hath an upright Stalk, 2 Feet high, which never branches out into Stalks, as most of the other Sorts, but has short Foot Stalks coming out by Pairs at the Joints; these, and also the upright Stalk, are garnished with Spear-shaped smooth Leaves. The Flowers are produced in small silvery Heads at the Wings of the Stalks; these appear in *July* and *August*, and the Seeds ripen in Autumn.

The 7th Sort hath creeping Stalks, which put out Roots at the Joints as they trail on the Ground; these are garnished with small, Spear-shaped, oval Leaves, placed opposite. The Flowers are produced in round silvery Heads, sitting close to the Stalks, and are each succeeded by a single oval Seed, wrapped up in a Down. It grows naturally in all the *West-Indian* Islands.

The 8th Sort grows naturally in *Jamaica*, from whence I received the Seeds; this Sort hath creeping Stalks, which divide by Pairs, and are hairy; these put out Roots at their Joints, and spread to a great Distance; they are garnished with Spear-shaped Leaves, placed opposite, and at each Joint the Flowers are produced in small silvery Heads, sitting close to the Stalks. This flowers in *July*, and the Seeds ripen in Autumn.

The 9th Sort hath trailing Stalks, which below are garnished with Spear-shaped Leaves, but at the Top they are round. The Stalks and Leaves of this are hairy. The Flowers terminate the Stalks in small round purple Heads, which are loose; these are succeeded by single Seeds wrapped up in a Down.

The 10th Sort hath climbing Stalks, which rise upward of 20 Feet, where they meet with Support; these are garnished with Leaves like Campion, placed opposite. The Flowers are produced on long Foot Stalks, which come out opposite; these branch out into smaller Foot Stalks, each sustaining three Heads of yellow Flowers, the Middle one sitting close to the Stalk.

The two Sorts with large Heads of Flowers which
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are first mentioned, one with purple, and the other with Silver-coloured, are very ornamental Plants in Gardens, and are now very very commonly cultivated in *English* Gardens for that Reason. In *Portugal*, and other warm Countries, they are cultivated to adorn their Churches in Winter, for if these are gathered when full grown, and dried in the Shade, they will retain their Beauty a long Time, especially if not exposed to the Air; these Plants are annual, so are only propagated by Seeds, which should be sown on a good hot Bed the Beginning of *March*; but if the Seeds are not taken out of their chaffy Covering, it will be proper to soak them in Water for twelve Hours before they are sown, which will greatly facilitate their growing. When the Plants are half an Inch high, they should be transplanted on a fresh hot Bed, at about 4 Inches Distance, observing to shade them till they have taken Root; then they should have fresh Air admitted to them every Day, in Proportion to the Warmth of the Season; they will also require to be frequently refreshed with Water. In about a Month's Time the Plants will have grown so large, as to nearly meet, therefore they will require more Room, otherwise they will draw up weak; then a fresh hot Bed should be prepared, into which there should be a sufficient Number of Threefarthing Pots plunged, filled with light rich Earth, and when the Bed is in a proper Temperature of Warmth, the Plants should be carefully taken up with Balls of Earth to their Roots, and each planted into a separate Pot, observing to shade them till they have taken new Root, and afterward they must be treated as other tender exoticks. When the Plants have filled these Pots with their Roots, they should be shaken out of the Pots, and their Roots on the Outside of the Ball of Earth must be carefully pared off; then they should be put into Pots a Size larger, and where there is Conveniency of a deep Frame, to plunge the Pots into another gentle hot Bed, it will bring the Plants early to flower, and cause them to grow much larger than those which are placed abroad. In *July* the Plants should be inured gradually to bear the open Air, into which they may be removed about the Middle of that Month, and intermixed with other annuals to adorn the Pleasure Garden, but it will be proper to keep a Plant or two of each Sort in Shelter for Seeds, because when the Autumn proves cold or wet, those Plants which are exposed, seldom produce good Seeds.

The other Sorts are all of them tender Plants, so require to be raised on a hot Bed, and the Plants treated as the former Sorts, and if the trailing Sorts are turned out of the Pots when their Roots have filled them, and planted on a hot Bed, their Stalks will put out Roots at their Joints, and their branching Stalks will extend to a considerable Distance on every Side, and they will produce their Heads of Flowers at every Joint, but unless the Glasses are kept over them, and only a proper Share of Air admitted to them, they will not perfect Seeds in *England*.

The perennial climbing Sorts must be removed into the Bark Stove, and plunged into the back Side of the Tan Bed, where they may have Room to grow in Height, especially the 10th Sort, which will rise to a great Height with proper Management; these Sorts seldom flower till the second Year, and the Plants will live

3 or 4 Years, if preserved in a Stove.

These Sorts are not very ornamental, so are seldom cultivated but in Botanical Gardens for Variety.

GOOSEBERRY. See *Grossularia*.

GORZ. See *Ulex*.

GOSSYPIMUM. *Lin. Gen. Pl.* 755. *Xylon. Tourn. Inf.* R. H. 101. *Tab.* 27. Cotton.

The Characters are,

The Flower has a double Empalement; the outer is large, of 1 Leaf, and cut half Way into 3 Parts; the inner is Cup-shaped, of 1 Leaf, cut into 5 obtuse Segments at the Top, which are indented. It hath 5 plain Heart-shaped Petals, which join at their Base and spread open. It hath a great Number of Stamina, joined at Bottom in a Column, but are loose above, and inserted into the Petals; these are terminated by Kidney-shaped Summits. It hath a round Germen, supporting 4 Styles, joined in the Column, and are the same Length of the Stamina, crowned by 4 thick Stigmas. The Germen becomes a roundish Capsule, ending in a Point, having 4 Cells, filled with oval Seeds, wrapped up in Down.

The Species are,

1. GOSSYPIMUM foliis quinquelobis, caule herbaceo. *Hort. Ups.* 203. Cotton with Leaves having 5 Lobes, and an herbaceous Stalk. *Gossypium. Camer. Epit.* 203. *Gossypium. Camer. Epit.* 203. The common herbaceous Cotton.

2. GOSSYPIMUM foliis trilobis integerrimis. *Hort. Ups.* 204. Cotton with entire Leaves having 3 Lobes, *Gossypium frutescens annuum, folio trilobo Barbadosense. Pluk. Alm.* 172. *Tab.* 188. Shrubby annual Barbadoes Cotton with Leaves having 3 Lobes.

3. GOSSYPIMUM foliis palmatis, lobis lanceolatis, caule fruticoso. *Lin. Sp. Pl.* 693. Cotton with Hand-shaped Leaves, having 5 Spear-shaped Lobes, and a shrubby Stalk. *Xylon arboreum, flore flavo. Tourn. Inf.* R. H. 101. Tree Cotton with a yellow Flower.

4. GOSSYPIMUM foliis trilobis & quinquelobis acutis, caule ramoso hirsuto. Cotton with Leaves having 3 and 5 Lobes, ending in acute Points, and a hairy branching Stalk. *Xylon Americanum præstantissimum, semine virescente. Lign. Tourn. Inf.* R. H. 101. Finest American Cotton with a green Seed.

The 1st Sort is the common *Levant* Cotton, cultivated in several Islands of the *Archipelago*, also in *Malta*, *Sicily*, and the Kingdom of *Naples*; it is sown in tilled Ground in the Spring of the Year, and is ripe in about four Months after, when it is cut down in Harvest as Corn is in *England*, and is sown every Year, the Plants always perishing soon after the Seeds are ripe; this Plant grows about 2 Feet high, with an herbaceous Stalk, garnished with smooth Leaves divided into 5 Lobes. The Stalks send out a few weak Branches upward, garnished with Leaves of the same Form but smaller. The Flowers are produced at the Extremity of the Branches; these have 2 large Empalements, the outer is cut into 3 Parts, the inner into five. The Petals of the Flower are of a pale yellow Colour, inclining to white; they are succeeded by oval Capsules, which open in 4 Parts, having 4 Cells, filled with Seeds wrapped up in a Down, which is the Cotton.

The 2d Sort grows naturally in several Islands of the *West-Indies*; this rises with a shrubby smooth Stalk, 4 or 5 Feet high, sending out a few Side Branches, garnished

nished with smooth Leaves, divided into 3 Lobes. The Flowers are produced at the End of the Branches, which are shaped like those of the former Sort, but are larger, larger, and of a deeper yellow. The Pods are larger and the Seeds black.

The 3d Sort hath a perennial shrubby Stalk, which rises 6 or 8 Feet high, and divides into many Branches; these are smooth, and are garnished with Hand-shaped Leaves, having 4 or 5 Lobes. The Flowers are produced at the End of the Branches; these are larger than those of the 2 former Sorts, and are of a deep yellow Colour. The Pods of this Sort are larger than those of the former.

The 4th Sort is a Native of the *East and West-Indies*, from whence the Seeds have been brought to *Europe*; this is also an annual Plant, which perishes soon after the Seeds are ripe. It rises to the Height of 3 Feet or more, and sends out many lateral Branches, which extend to a great Distance, where they are allowed Room to grow; these are hairy, and garnished with Leaves, having in some 3, and others 5 acute-pointed Lobes; these have short hairy Down on their Surface. The Flowers are produced from the Side, and at the End of the Branches; they are large, of a dirty Sulphur Colour, each Petal having a large purple Spot at the Base; these are succeeded by oval Pods, which open into 4 Cells, filled with oblong green Seeds, wrapped up in a soft Down. Where the Plants have Room to spread, their Branches will produce 4 or 5 Pods of Cotton upon each, so that from a single Plant, 20 or more Pods may be produced, and each of these as large as middling Apples, so there will be a much greater Produce from this than from any other Sort, and the Staple is much finer; therefore it is well worth the Attention of the *British Colonies in America* to cultivate and improve this Sort, since it will succeed in *Carolina*, where it has been cultivated for some Years, and might be a Commodity worthy of Encouragement by the Publick, could they contrive a proper Gin to separate the Cotton from the Seeds to which this Sort adheres much closer than any of the others, the Cotton from this Shrub being preferable to any other yet known.

All these Sorts are very tender Plants, therefore will not thrive in the open Air in *England*, but are frequently sown in curious Gardens for Variety; the 1st and 4th Sorts will produce ripe Seeds in *England*, if the Seeds are sown early in the Spring, on a good hot Bed; and when the Plants are come up, planted each into separate Pots, and plunged into a hot Bed of Tanners Bark to bring them forward, and when they are grown too tall to remain under the Frames, removed into the Tan Bed in the Stove, and shifted into larger Pots, when their Roots have filled the other; with this Management I have had their Flowers appear in *July*, and toward the End of *September* the Seeds have been perfectly ripe, and the Pods as large as those produced in the *East and West-Indies*; but if the Plants are not brought forward early in the Spring, it will be late in the Summer before the Flowers will appear, and there will be no Hopes of the Pods coming to Perfection.

The Shrub Cotton will rise from the Seeds very easily, if they are sown upon a good hot Bed; and when they are sown early in the Spring, and brought forward as directed for the former Sorts, the Plants will grow to

be 5 or 6 Feet high the same Summer; but it is difficult to preserve the Plants through the Winter, unless they are hardened gradually in *August* during the Continuance of the warm Weather; for when they are forced on at that Time, they will be so tender, as to render them incapable of resisting the least Injury. The Plants of this Sort must be placed in the Bark Stove in Autumn, and kept in the first Class of Heat, otherwise they will not live through the Winter in *England*.

GRAFTING is the taking a Shoot from one Tree, and inserting it into another, in such a Manner, that both may unite closely, and become one Tree; this is called by the ancient Writers in Husbandry and Gardening, Incision, to distinguish it from Inoculating, or Budding, which they call *inserere Oculis*.

The Use of Grafting is to propagate any curious Sorts of Fruits, so as to be certain of the Kinds, which cannot be done by any other Method; for as all the good Fruits have been accidentally obtained from Seeds, so the Seeds of these, when sown, will many of them degenerate, and produce such Fruit as are not worth cultivating; but when Shoots are taken from such Trees as produce good Fruit, these will never alter from their Kind, whatever be the Stock, or Tree, on which they are grafted; for though the Grafts receive their Nourishment from the Stocks, yet they are never altered by them, but continue to produce the same Kind of Fruit as the Tree from which they were taken; the only Alteration is, that when the Stocks on which they are grafted do not grow so fast, and afford a sufficient Supply of Nourishment to the Grafts, they will not make near so great Progress as they otherwise would do, nor will the Fruit they produce be so fair, and sometimes not so well flavoured.

These Shoots are termed *Cions*, or *Grafts*; in the Choice of these the following Directions should be carefully observed. 1st, That they are Shoots of the former Year, for when they are older, they never succeed well. 2dly, Always to take them from healthy fruitful Trees, for if the Trees are sickly from whence they are taken, the Grafts very often partake so much of the Distemper, as rarely to get the better of it, at least for some Years; and when they are taken from young luxuriant Trees, whose Vessels are generally large, they will continue to produce luxuriant Shoots, and are seldom so fruitful as those taken from fruitful Trees, whose Shoots are more compact, and the Joints closer together, at least it will be a great Number of Years before these luxuriant Grafts begin to produce Fruit, if they are managed with the greatest Skill. 3dly, You should prefer those Grafts taken from the lateral, or horizontal Branches, to those from the strong perpendicular Shoots, for the Reasons before given.

These Grafts, or Cions, should be cut off from the Trees before their Buds begin to swell, which is generally three Weeks or a Month before the Season for grafting, therefore, when they are cut off, they should be laid in the Ground with the Cut downwards, burying them half their Length, and covering their Tops with dry Litter, to prevent their drying; if a small Joint of the former Year's Wood is cut off with the Cion, it will preserve it the better, and when they are grafted,

this may be cut off; for at the same Time the Cions must be cut to a proper Length, before they are inserted into the Stocks, but, till then, the Shoots should remain their full Length, as they were taken from the Tree, which will preserve them better from shrinking; if these Cions are to be carried to a considerable Distance, it will be proper to put their cut Ends into a Lump of Clay, and to wrap them up in Moss, which will preserve them fresh for a Month, or longer; but these should be cut off earlier from the Trees, than those which are to be grafted near the Place where the Trees are growing.

Having given Directions for the Cions and Grafts, we next come to that of the Stock, which is a Term applied to the Trees intended for grafting; these are either such old Trees as are already growing in the Places where they are to remain, whose Fruit is intended to be changed, or young Trees which have been raised in a Nursery for a Supply to the Garden; in the former Case there is no other Choice, but that of the Branches, which should be such as are young, healthy, well situated, and have a smooth Bark; if these Trees are growing against Walls, or Espaliers, it will be proper to graft 6, 8, or 10 Branches, according to the Size of the Trees, by which Method they will be much sooner furnished with Branches again, than when a less Number of Cions are put in; but in Standard Trees, 4, or at most 6 Cions will be sufficient.

In the Choice of young Stocks for grafting, you should always prefer such as have been raised from the Seed, and that have been once or twice transplanted. Next to these, are those Stocks which have been raised from Cuttings, or Layers, but those which are Suckers from Roots of other Trees, should always be rejected, for these are never so well rooted as the others, and constantly put out a great Number of Suckers from their Roots, whereby the Borders and Walks of the Garden will be always pestered with them during the Summer Season, which is not only unsightly, but they also take off Part of the Nourishment from the Trees.

If these Stocks have been allowed a proper Distance in the Nursery where they have grown, the Wood will be better ripened, and more compact than those which have grown close, and have been thereby drawn up to a greater Height; the Wood of these will be soft, and their Vessels large, so that the Cions grafted into them will shoot very strong, but they will be less disposed to produce Fruit than the other, and when Trees acquire an ill Habit at first, it will be very difficult to reclaim them afterward.

Having directed the Choice of Cions and Stocks, we come next to the Operation, in order to which you must be provided with the following Tools.

1. A neat small Hand Saw to cut off the Heads of large Stocks.
2. A good strong Knife with a thick Back, to make Clefts in the Stocks.
3. A sharp Penknife to cut the Grafts.
4. A grafting Chissel and a small Mallet.
5. Bals Strings, or woollen Yarn, to tie the Grafts with, and such other Instruments and Materials as you shall find necessary, according to the Manner of grafting you are to perform.
6. A Quantity of Clay, which should be prepared a

Month before it is used, and kept turned and mixed, like Mortar every other Day, which is to be made after the following Manner:

Get a Quantity of strong fat Loam (in Proportion to the Quantity of Trees intended to be grafted,) then take some new Stonehorse Dung, and break it in amongst the Loam, and if you cut a little Straw, or Hay, very small, and mix among it, the Loam will hold together the better; and if there be a Quantity of Salt added, it will prevent the Clay from dividing in dry Weather; these must be well stirred together, putting Water to them after the Manner of making Mortar; it should be hollowed like a Dish, and filled with Water, and kept every other Day stirred; but it ought to be remembered, that it should not be exposed to the Frost, or drying Winds, and that the oftener it is stirred and wrought the better.

Of late Years some Persons have made use of another Composition for grafting, which they have found to answer the Intention of keeping out the Air, better than the Clay before prescribed. This is composed of Turpentine, Bees Wax, and Rosin, melted together, which, when of a proper Consistence, may be put on the Stock round the Graft, in the same Manner as the Clay is usually applied, and though it be not above a Quarter of an Inch thick, yet will keep out the Air more effectually than the Clay, and as Cold will harden this, there is no Danger of its being hurt by Frost, which is very apt to cause the Clay to cleave, and sometimes fall off; and when the Heat of Summer comes on, this Mixture will melt, and fall off without any Trouble. In using this, there should be a Tin, or Copper Pot, with Conveniency under it to keep a very gentle Fire with Small Coal, otherwise the Cold will soon condense the Mixture, but you must be careful not to apply it too hot, lest you injure the Graft. A Person who is a little accustomed to this Composition, will apply it very fast, and it is much easier for him than Clay, especially if the Season should prove cold.

There are several Ways of Grafting, the principal of which are four:

1. Grafting in the Rind, called also Shoulder-grafting, which is only proper for large Trees; this is called Crown-grafting, because the Grafts are set in Form of a Circle, or Crown, and is generally performed about the latter End of *March*, or the Beginning of *April*.

2. Cleft-grafting, which is also called Stock, or Slit-grafting; this is proper for Trees or Stocks of a lesser Size, from an Inch to two Inches or more Diameter; this Grafting is to be performed in the Months of *February* and *March*, and supplies the Failure of the Escutcheon Way, which is practised in *June*, *July*, and *August*.

3. Whip-grafting, which is also called Tongue-grafting; this is proper for small Stocks of an Inch, half an Inch, or less, Diameter; this is the most effectual Way of any, and that which is most in Use.

4. Grafting by Approach, or Ablatation; this is to be performed when the Stock you would graft on, and the Tree from which you take your Graft, stand so near together, that they may be joined; this is to be performed in the Month of *April*, and is also called Inarching, and is chiefly used for *Jasmines*, *Oranges*, and other tender exotick Trees.

We next come to the Manner of performing the several Ways of grafting.

The 1st Method which is termed Rind, or Shoulder-grafting, is seldom practised, but on large Trees, where either the Head, or the large Branches, are cut off horizontally, and 2 or 4 Cions put in, according to the Size of the Branch, or Stem; in doing this, the Cions are cut flat on one Side, with a Shoulder to rest upon the Crown of the Stock; then the Rind of the Stock must be raised up to admit the Cion between the Wood and the Bark of the Stock, which must be inserted about 2 Inches, so as the Shoulder of the Cion may meet, and closely join the Crown of the Stock; and after the Number of Cions are inserted, the whole Crown of the Stock should be well clayed over, leaving two Eyes of the Cions uncovered therewith; which will be sufficient for shooting; this Method of grafting was much more in Practice formerly than at present; the Discontinuance of it was occasioned by the ill Success it was attended with, for as these Cions were placed between the Rind of the Stock and the Wood, so they were frequently blown out by strong Winds, after they had made large Shoots, which has sometimes happened after 5 or 6 Years Growth, so that whenever this Method is practised, there should be some Stakes fastened to support the Cions, until they have almost covered the Stock.

The next Method is termed Cleft, or Stock-grafting; this is practised upon Stocks, or Trees, of a smaller Size, and may be used with Success, where the Rind of the Stock is not too thick, whereby the inner Bark of the Cion will be prevented joining to that of the Stock; this may be performed on Stocks, or Branches, which are more than one Inch Diameter; in doing of this, the Head of the Stock, or Branch, must be cut off with a Slope, and a Slit made the contrary Way, in the Top of the Slope, deep enough to receive the Cion, which should be cut sloping like a Wedge, so as to fit the Slit made in the Stock, being careful to leave that Side of the Wedge, which is to be placed outward, much thicker than the other, and in putting the Cion into the Slit of the Stock, there must be great Care taken to join the Rind of the Cion to that of the Stock, for if these do not unite, the Grafts will not succeed; when this Method of Grafting is used to Stocks which are not strong, it will be proper to make a Ligature of Bafs, to prevent the Slit of the Stock from opening; then the Whole should be clayed over, to prevent the Air from penetrating the Slit, so as to destroy the Grafts, only leaving two Eyes of the Cions above the Clay for shooting.

The 3d Method is termed Whip, or Tongue-grafting, which is the most commonly practised of any by the Nursery Men near *London*, especially for small Stocks, because the Cions much sooner cover the Stocks in this Method, than in any other.

This is performed by cutting off the Head of the Stocks sloping; then there must be a Notch, made in the Slope toward the upper Part downward, a little more than half an Inch deep, to receive the Cion, which must be cut with a Slope upward, and a Slit made in this Slope like a Tongue, which Tongue must be inserted into the Slit made in the Slope of the Stock,

and the Cion must be placed on one Side of the Stock, so as that the two Rinds of both Cion and Stock, may be equal, and join together exactly; then there should be a Ligature of Bafs to fasten the Cion, so as that it may not be easily displaced, and afterward clay it over, as in the former Methods.

The 4th Sort of Grafting is termed Inarching-grafting, by Approach, or Ablactation. This is only to be performed when the Stocks, designed to be grafted, and the Tree from which the Graft is to be taken, stand so near together, or may be brought so near together, as that their Branches may be united together; this Method of Grafting is commonly practised on tender exotick Plants, and some other Sorts which do not succeed in any of the other Methods.

In performing this Operation, a Part of the Stock, or Branch, must be cut off about two Inches in Length, observing always to make Choice of a smooth Part of the Stock; then a small Notch should be made in the Stock downward, as hath been directed for Whip-grafting; then the Branch of the Tree designed to be inarched, should have a Part cut off in the like Manner as the Stock, and a Slit made upward in this, so as to leave a Tongue, which Tongue should be inserted into the Slit of the Stock, observing to join their Rinds equally, that they may unite well together; then make a Ligature of Bafs, to keep them exactly in their Situation, and afterwards clay this Part of the Stock over well, to keep out the Air; in this Method of Grafting, the Cion is not separated from the Tree, until it is firmly united with the Stock, nor is the Head of the Stock, or Branch, which is grafted, cut off, till this Time, and only Half the Wood pared off with a Slope, about three Inches in Length, and the same of the Cion, or Graft.

This Method of Grafting is not performed so early in the Season, as the other, it being done in the Month of *April*, when the Sap is flowing, at which Time the Cion and Stock will join together, and unite much sooner than at any other Season.

The Walnut, Fig, and Mulberry, will take by this Method of Grafting, but none of them will succeed in any of the other Methods; there are also several Sorts of Evergreens, which may be propagated by this Method; but all the Trees which are grafted in this Way are weaker, and never grow to the Size of those grafted in the other Methods, therefore this is rarely practised, but on such Sorts of Trees as will not take by the other Methods.

The next Thing necessary to be known by those who would practise this Art, is, what Trees will take and thrive by being grafted upon each other; and here there have been no sure Directions given by any of the Writers on this Subject, for there will be found great Mistakes in all their Books, in relation to this Matter; but as it would swell this Article too much, if all the Sorts of Trees were to be here enumerated, which will take upon each other by Grafting, I shall only mention such general Directions, as, if attended to, will be sufficient to instruct Persons, so as they may succeed.

All such Trees as are of the same Genus, *i. e.* which agree in their Flower and Fruit, will take upon each other:

other: For Instance, all the Nut-bearing Trees may be safely grafted on each other, as may all the Plum-bearing Trees, under which Head I reckon not only the several Sorts of Plums, but also the Almond, Peach, Nectarine, Apricock, &c. which agree exactly in their general Characters, by which they are distinguished from all other Trees; but as many of these are very subject to emit large Quantities of Gum from the Parts of the Trees that are deeply cut and wounded, so the tender Trees of this Kind, most subject to this, viz. Peaches and Nectarines, are found to succeed best by Budding or Inoculation.

All Trees that bear Cones will do well upon each other, though they may differ in one being ever-green, and the other shedding its Leaves in Winter, as is observable in the Cedar of *Lebanus*, and the Larch Tree, which are found to succeed upon each other very well; but these must be grafted by Approach, for they abound with a great Quantity of Resin, which is apt to evaporate from the Graft, if separated from the Tree before it is joined with the Stock, whereby they are often destroyed, as also the Laurel on the Cherry, or the Cherry on the Laurel. All the Mast-bearing Trees will take upon each other, and those which have a tender soft Wood will do well if grafted in the common Way, but those of a firmer Contexture, and slow Growth, should be grafted by Approach.

By strictly observing this Rule, we shall seldom miscarry, provided the Operation be rightly performed, and at a proper Season, unless the Weather should prove very bad, as it sometimes happens, whereby whole Quarters of Fruit Trees miscarry; and it is by this Method that many Kinds of exotick Trees are not only propagated, but rendered hardy enough to endure the Cold of our Climate in the open Air; for, being grafted on Stocks of the same Sort which are hardy, the Grafts are rendered more capable to endure the Cold; as hath been experienced in most of our valuable Fruits now in *England*, which were formerly transplanted hither from more southerly Climates, and were at first too impatient of our Cold to succeed well abroad, but have been, by Budding or Grafting upon more hardy Trees, rendered capable of resisting our severest Cold.

And these different Graftings seem to have been greatly in Use among the Ancients, though they were certainly mistaken in the several Sorts of Fruits, which they mention to have succeeded upon each other, as the Fig upon the Mulberry, the Plum upon the Chestnut, with many others of the like Kind; most of which I have already tried, and find they will not succeed, therefore what has been advanced on this Head is not founded on Experience, or at least they did not mean the same Plants which at present are called by those Names; though I cannot help thinking we are apt to pay too much Deference to the Writings of the Ancients, in supposing them seldom to be mistaken, or to assert a Falshood; whereas, if their Works are carefully examined, it will be found, that they often copied from each others Writings, without making Experiments to prove the Truth of their Assertions: And it is well known, that the ranging of Plants before *Cæsalpinus's* Time (which is but about 150 Years since) was, by their

outward Appearance, or from the supposed Virtues of them; which Method is now justly exploded, and it hath been observed, from many repeated Trials, that however Plants may resemble each other in the Shape and Make of their Leaves, Manner of Shooting, &c. unless they agree in their Fruit, and their other distinctive Characters, they will not grow upon each other, though performed with ever so much Art.

GRAMEN. *Tourn. Inst. R. H.* 516. *Tab.* 297. *Raii Meth. Plant.* 171. Grass; in *French*, *Cbien-dent*.

To enumerate all the Species of Grass found growing naturally in *England*, would swell this Article greatly beyond the Design of the Work; therefore I shall only take Notice of a few Species, which are either used in Medicine, or cultivated for Use; for there is scarce a Pasture in this Country, where at least twenty different Species are not to be found intermixed, and in most of them more than twice that Number. These were, by the former Writers on Botany, all included under the common Denomination of *Gramen*, but were divided into different Sections. Mr. Ray has ranged them in the following Order, *Gramen triticeum*, i. e. Wheat Grass. *Gramen Secalinum*, i. e. Rye Grass. *Gramen Loliaceum*, i. e. Darnel Grass. *Gramen Paniceum*, i. e. Panick Grass. *Gramen Phalaroides*, i. e. Canary Grass. *Gramen Alopecuroides*, i. e. Foxtail Grass. *Gramen Typhinum*, i. e. Cat's-tail Grass. *Gramen Echinatum*, i. e. Hedgehog Grass. *Gramen Cristatum*, i. e. Crested Grass. *Gramen Avenacium*, i. e. Oat Grass. *Gramen Dactylon*, i. e. Cocksfoot Grass. *Gramen Arundinaceum*, i. e. Reed Grass. *Gramen Miliaceum*, i. e. Millet Grass. And under each of these Sections, there are many Species. And there are many others, which, by older Writers, were included under this general Title, some of which have no Relation to this Class; but there are others which are nearly allied to it, as the *Cyperus*, and *Cyperus* Grasses, &c. These Dr. *Linnaeus* has divided into Genera, but by his Method of classing them, he has separated them to a great Distance from each other; for all those whose Flowers have three Stamina, are ranged in his third Class; and others which have male and female Flowers, are removed to his twenty-first Class. However, it would have been much better to have kept them together, as Dr. *Van Royen* has done in the *Prodromus* of the *Leyden Garden*, under one general Title to the Class of *Graminea*.

As the several Genera under which the different Species of Grass are ranged, have different Characters by which they are distinguished, so it would be to little Purpose to give them all in this Work; and as there are no general Characteristicks by which the whole Class can be known, so I shall not trouble the Reader with any of them here, but proceed to enumerate a few of the Species.

1. GRAMEN *spica triticea repens vulgare, caninum dictum*. *Raii Syn.* 2. p. 247. Common creeping Grass with a Spike like Wheat, called Dog Grass. *Triticum calycibus subulatis trifloris acuminatis*. *Lin. Sp. Pl.* Wheat with an Awl-shaped pointed Empalement including 3 Flowers, commonly called Couch, Couch Grass, or Quick Grass.

2. GRAMEN *loliaceum, angustiore folio & spica*. *C.B.P.* Darnel

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Darnel Grass, with a narrower Leaf and Spike. *Lolium spicâ muticâ. Lin. Sp. Pl. 83.* Darnel with a chaffy Spike, commonly called Ray, or Rye Grass.

3. GRAMEN *pratense, paniculatum majus, angustiore folio. C. B. P. 2.* Meadow Grass, with larger Panicles and a narrower Leaf. *Poa paniculâ diffusâ, spiculis quadrifloris pubescentibus, culmo erecto tereti. Flor. Suec. 77.* Poa with a diffused Panicle, the smaller Spikes having 4 hairy Flowers, and a taper erect Straw.

4. GRAMEN *pratense, paniculatum majus, latiore folio. C. B. P. 2.* Meadow Grass, with a larger Panicle and broader Leaf. *Poa paniculâ diffusa spiculis trifloris glabris, culmo erecto tereti. Flor. Suec. 76.* Poa with a diffused Panicle, small Spikes with 3 Flowers, and an upright Straw.

5. GRAMEN *avenacium pratense elatius, paniculâ flavescente, locustis parvis. Rati Syn. 407.* Taller Meadow Oat Grass, with a yellowish Panicle and small Husks. *Avena paniculâ laxâ, calycibus trifloris brevibus, flosculis omnibus aristatis. Prod. Leyd. 66.* Oat Grass with a loose Panicle, three Flowers in each Empalement, which is short, and all the Flowers having Awns.

6. GRAMEN *secalinum. Ger. Emac. Lib. 1. Cap. 22. n. 4.* Tall Meadow Rye Grass.

7. GRAMEN *tremulum maximum. C. B. P. 2.* Greatest quaking Grass, or Cowquakes. *Briza spiculis cordatis, flosculis septendecim. Hort. Cliff. 23.* Briza with Heart-shaped little Spikes, and 17 Flowers in each.

The 1st Sort of Grass is that directed to be used in Medicine; the Roots of this are chiefly used, and are accounted aperitive and diuretick, opening Obstructions of the Reins and Bladder, provoking Urine, and are of Service against the Gravel and Stone. The Juice of the Leaves and Stalks was greatly esteemed by Dr. Boerhaave, who generally prescribed this in all Cases where he supposed there were any Obstructions in the Bile Conduit.

This hath a creeping Root, which spreads far in the Ground, and is a very troublesome Weed in Gardens and arable Land; for every small Piece of the Root will grow and multiply exceedingly, so it is very difficult to extirpate where it once gets possession: In Gardens, the common Method of destroying it is, to fork out the Roots as often as the Blades appear above Ground; where this is two or three Times carefully repeated, it may be totally rooted out; but when the Surface of the Ground is very full of the Roots, the shortest Way of destroying it, is to trench the Ground two Spits and a Shoveling deep, turning all the Couch into the Bottom, where it will rot, and never shoot up; but this can only be practised, where there is a sufficient Depth of Soil, for in shallow Ground the Roots cannot be buried so deep, as to lie below the Depth to which they naturally shoot.

Where the Roots of this Grass get Possession in arable Fields, it is very difficult to root out again; the usual Method is by laying the Land fallow in Summer, and frequently harrowing it well over to draw out the Roots; where this is carefully practised, the Ground may be so well cleaned in one Summer, as that the Roots cannot much injure the Crop which may be sown upon it; but such Land should be cropped with such Things as require the Horse Hoeing Culture, for where the Land

can be frequently stirred and harrowed afterward, it will be of great Service in cleaning it from the Roots of this Grass and other bad Weeds. The Blade of this Grass is so rough, that Cattle will not feed upon it.

The 2d Sort is frequently cultivated, especially in strong cold Land, upon which this Grass will succeed better than any other Species, and is an earlier Feed in the Spring; but this is a very coarse Grass, and unless it is cut very early for Hay, it becomes hard and wieri in the Stalks, so that few Cattle care to eat it; for this Species has but few Leaves, running all to Stalk, so is usually called *Bents*, and in some Counties *Bennet*; when this Grass is fed, it will be proper to mow off the Bents in June, otherwise they will dry upon the Ground, and have the Appearance of a stubble Field all the latter Part of Summer; so that it will not only be very disagreeable to the Sight, but also troublesome to the Cattle that feed on it, by tickling their Nostrils; so that the Want of better Pasture only, will force them to eat of the young Grass which springs up between these Bents, for those they will not touch; so that those who suppose that these are eaten in Scarcity of Feed by the Cattle, are greatly mistaken, for I have many Years closely attended to this, and have always found these Bents remaining on the Ground untouched, till the Frost, Rain, and Winds, destroy it in Winter; and, by permitting these to stand, the after Growth of the Grass is greatly retarded, and the beautiful Verdure is lost for 3 or 4 Months; so that it is good Husbandry to mow them before they grow too dry, and rake them off the Ground; if these are then made into Hay, it will serve for Cart Horses Feed in Winter, and will pay the Expence of mowing it.

There is another Species of this Grass called Red Darnel, of a worse Nature than the first, the Stalks growing hard much sooner, and having narrower Leaves: This is very common in most Pasture Grounds, for as it comes early to flower, so the Seeds are generally ripe before the Hay is cut, and from the falling Seeds the Ground is supplied with Plenty of this Sort; therefore those desirous to keep their Pastures as clear from this Grass as possible, should always mow it before the Seeds are ripe.

This Grass is usually sown with Clover, on such Lands as are designed to be ploughed again in a few Years, and the common Method is to sow it with Spring Corn; but from many repeated Trials, I have always found, that by sowing these Seeds in August, when there has happened a few Showers to bring up the Grass, that the Crop has answered much better than any which has been sown in the common Way; for the Grass has often been so rank, as to afford a good Feed the same Autumn; and the following Spring there has been a Ton and a Half of Hay per Acre mowed very early in the Season, and this has been upon cold sour Land; so that I am convinced it is the best Season for sowing these Grasses, though it will be very difficult to persuade those Persons to alter their Practice, who have been long wedded to old Customs. The Quantity of Seeds which I allow to an Acre is about two Bushels, and eight Pounds of the common Clover, which, together, will make as good Plant upon the Ground as can be desired; but this is not to be practised upon such Lands where the

the Beauty of the Verdure is principally regarded, therefore is fit for those who have only Profit in View.

The 3d and 4th Sorts are the two best Species of Grasses for Pastures, so that if the Seeds of these were carefully collected and sown separately, without any other Mixture of Grass Seeds, they would not only afford a greater Quantity of Feed on the same Space of Land, but the Grass would be better, the Hay sweeter, and the Verdure more lasting than of any other Sort; but there requires some Attention to the saving of these Seeds pure without Mixture. I have tried to save the Seeds of several Species of Grasses separately, in order to determine their Qualities, but have found it very difficult to keep them distinct in Gardens where the Seeds of other Sorts of Grasses have been scattered; the only Method in which I could succeed, was by sowing each Species in a distinct Pot, and when the Plants came up, to weed out all the other Kinds of Grasses which came up in the Pots; by this Means I preserved a great Variety of the grassy Tribe several Years, but not having Ground enough to propagate the most useful Species in any Quantity, I was obliged to abandon the Pursuit; but I must recommend this to Persons of Leisure and Skill, who have a sufficient Quantity of Land for the Purpose, to carry this Project into Execution, which may be of singular Benefit to the Publick; for we have an Instance of the Advantage which the Inhabitants of the *Netherlands* have made, by saving the Seeds of the White Clover, or Honeyfuckle Trefoil, which is a Plant common to most of the *English* Pastures, yet no Person in this Country ever gave themselves the Trouble to collect the Seeds from the Fields for sowing, but have purchased vast Quantities of this Seed annually, at a considerable Price from *Flanders*, where the Peasants have been so industrious, as to collect the Seeds and sow great Quantities of Land with it, with a View of Sale to this Country only. This is not an inconsiderable Article in Husbandry, but deserves the Attention of all those, who, by Choice or otherwise, are engaged in the Business of Agriculture; for one Acre of Land will produce as much Seeds of this Species of Trefoil, as will sell for 12*l.* where it is a good Crop, and saved from the Spring Crop; and if the Grass Seeds before-mentioned were separately sown, and carefully weeded from all other Species, and permitted to stand till their Seeds were ripe, it might be of equal Advantage with the other, especially now, when every Gentleman is endeavouring to improve the Verdure near their Habitations.

The 5th and 6th Sorts are also very good Grasses for Pastures, and have perennial Roots, so are the next best Sorts for sowing to those before-mentioned, which, in my Opinion, deserve the Preference to all the other; but as it will be difficult to save a sufficient Quantity of Seeds of those alone, to supply the Demand which may be for their Seeds; so these two Species may be admitted in Aid of the other, as they are very leafy Kinds of Grasses, and their Stalks do not become stiff and harsh like many other Species; but with proper Care may be made very fine, and, if duly rolled, their Roots will mat and form a very close Sward, therefore these should be included in the Number of sown Grasses.

The 7th Sort is mentioned for Variety, and not for Use; this hath an annual Root, which sends up many

broad hairy Leaves, between which arise slender stiff Stalks from a Foot to near two Feet high, dividing upward into a large loose Panicle, garnished with Heart-shaped small Spikes, each having about 17 small Floccules or Florets; these, after the Flowers are past, have a single Seed succeeding them; the Heads hang by slender long Foot Stalks, which are moved by every Wind, so that they generally appear shaking, from whence it had the Title of Quaking Grass. There are four Species of this Grass, two of them grow naturally in *England*, and these Grasses coming to Head in *May*, occasioned the following *English* Proverb, *May come she early come she late, makes the Cow quake.* The large Sort here mentioned, grows naturally in the South of *France* and *Italy*, and is only preserved in some *English* Gardens for Variety.

If the Seeds of this Sort are sown in the Autumn, or permitted to scatter when ripe, the Plants will come up stronger, and flower much earlier, than when sown in the Spring, so good Seeds may always be expected from them, which can seldom be attained from the Spring Plants in *England*; and as two or three Plants of this Sort will be full enough in a Garden for Variety, so these should be allowed Room to spread; for where they grow at a Distance from each other, the Roots will send out a great Number of Stalks, which will be stronger, and produce much larger Panicles than those which are too near together.

The Cocksfoot Grass, Caponstail Grass, and Millet Grasses, are too coarse to deserve Attention in *England*, though some of their Species are very useful in the warm Parts of *America*, where there is a great Scarcity of finer Grass; and some of these are much better adapted to those warm Countries, than any of our *European* Grasses, for many of them lie flat on the Ground, and emit Roots from their Joints, so are well prepared for Heat; their Stalks are large and juicy, so will live in Heat where few of the *European* Grasses can be made to thrive.

The Land on which Grass Seed is intended to be sown, should be well ploughed, and cleared from the Roots of noxious Weeds, such as Couch Grass, Fern, Rushes, Heath, Gorse, Broom, Rest-harrow, &c. which, if left in the Ground, will soon get the better of the Grass, and over-run the Land. Therefore in Places where either of these Weeds abound, it will be a good Method to plough up the Surface in *April*, and let it lie some Time to dry; then harrow the Roots into small Heaps, and burn them. The Ashes so produced, when spread on the Land, will be a good Manure for it. The Method of burning the Roots is particularly directed under the Article *Land*, which see: But where Couch Grass, Fern, or Rest-harrow, is in Plenty, whose Roots run far under Ground, the Land must be ploughed two or three Times pretty deep in dry Weather, and the Roots carefully harrowed off after each Ploughing, which is the most sure Method to destroy them. Where the Land is very low, and of a stiff clayey Nature, which holds Water in Winter, it will be of singular Service to make some under Ground Drains to carry off the Wet; which, if detained too long on the Ground, will render the Grass sour. The Method of making these Drains is prescribed under the Article *Land*, which see.

Before the Seed is sown, the Surface of the Ground should

should be made level and fine, otherwise the Seed will be buried unequally. When the Seed is sown it must be gently harrowed in, and the Ground rolled with a wooden Roller, which will make the Surface even, and prevent the Seeds being blown in Patches. When the Grass comes up, if there should be any bare Spots, where the Seed has not grown, they may be sown again, and the Ground rolled, which will fix the Seeds; and the first kindly Showers will bring up the Grass, and make it very thick.

Where the Land is designed to continue in Pasture, it should be sown with the best Sorts of Grass Seeds, and white Dutch Clover, or what is commonly called Honeyfuckle Grass in many Parts of England, but there is a great Difficulty of procuring Hay Seeds which are good; for in all the good Pastures near London, which abound with the best Sorts of Grass, the Hay is commonly cut before the Seeds of the Grass are ripe; so that those Seeds which are procured from the Stables where the Horses are fed with the best Sort of Hay, are little more than Chaff, or at best are only such as are of the early Kinds of Grass, with a great Quantity of Plantain and other Weeds; which has discouraged many Gentlemen from sowing them, nor has any one attempted to save these Seeds properly, and as it requires longer Time, and more Attention, to save a Quantity of Seeds of the purer Sorts of Grass than the Generality of People care to bestow, so I would recommend the setting some of those Upland Pastures, which are cleanest from Weeds, and have the sweetest Herbage, stand for Seeds; and although by so doing the Hay will be less valuable, yet from the Sale of the Seeds, it may answer better to the Possessor, than to mow it merely for the Hay; for any Gentleman who has Regard to the Beauty of his Land, had better give six Times the Price for such Seeds, as is usually paid for the ordinary Seeds, since the first Expence of Seeds is not to be put in Competition with the Beauty and Advantage of having such as are good; for when the Land is brought to a good Sward (which may be done in one Year, where it is properly prepared and sown with good Seeds) it may be kept in good Order, and by good Management improved annually, and will continue so, as long as proper Care is taken of it. I know some Land which was sown in the Method hereafter directed above 40 Years ago, which are now as good Pastures as any I have seen, and may be always continued so.

These Grounds abounded with many bad Weeds, so they had a Winter and Summer's fallow, in which Time they were five Times ploughed and ten Times harrowed in order to destroy the Weeds, and make the Surface of the Ground fine; in August they were sown with the best Grass Seeds could be procured, three Bushels of this, and nine Pounds of the white Dutch Clover Seeds were allowed to each Acre; as there happened Rains soon after the Seeds were sown, so the Grass came up well; but among it were a great Number of Weeds, which were drawn up and carried off the Ground, and in the Beginning of October the Fields were rolled with a Barley Roller; in the Spring the Fields were again weeded, and afterward rolled, and that Summer there was more than two Tons of Hay per Acre mowed off the Land; and by constant weeding twice a Year,

sweeping it with a Bush Harrow, rolling and dressing of the Land, the Grass has been greatly improved since, and is now as good Pasture as any in England; and since I have laid down great Quantities of Land in the same Manner, and with equal Success, therefore from many Years Experience can recommend it, as the surest Method of having good Pastures.

But I know the Generality of Farmers will object to the first Loss of their Crop, and also to the after Expence of weeding, rolling, &c. as too great for common Practice; however, I am well satisfied from Experience, that whoever will be at the Expence, will find their Account in it; for the Crops of Hay will be so much better, and the after Pasture also, that it will more than pay the Expence, as from many exact Accounts, which have been kept of the whole, is sufficiently demonstrated, and the Verdure of these Pastures is charming to all those who have any Taste of natural Beauties.

The proper Management of Pasture Land is the least understood of any Part of Agriculture; the Farmers never have attended to this, being more inclined to the Plough; though the Profits attending that have not of late Years been so great, as to encourage them in that Part of Husbandry; but these People never think of laying down Land for Pasture, to continue longer than three Years, at the End of which Time they plough it up again, to sow it with Grain.

There is a Sort of striped Grass preserved in many Gardens for the Beauty of its variegated Leaves, which continue fresh the greatest Part of the Summer. This Sort is easily propagated by parting the Roots, either in Spring or Autumn, for every Offset will increase to be a large Root in one Year's Time. It will grow on any Soil, or in any Situation, therefore may be planted in any object Part of the Garden, where it will thrive, and afford an agreeable Variety. This Sort is by many Persons called Ribband Grass, from the Stripes of white and green, which run the whole Length of the Blade, like the Stripes in some Ribbands.

For the further Management of Grass in Fields, see *Pasture and Meadow*; and for that in Gardens, see *Grass*.

Clover Grass. See *Trifolium*.

Saint Foin. See *Onobrychis*.

La Lucerne. See *Medica*.

Noneuch. See *Melilotus*.

Trefoil. See *Trifolium*.

Spurry. See *Spergula*.

GRANADILLA. See *Passiflora*.

GRAPES. See *Vitis*.

GRASS. The English Grass is of so good a Quality for Walks or Grass Plats, that if they be kept in good Order, they have that exquisite Beauty that they cannot come up to in France, and several other Countries.

But green Walks and green Plats are, for the most Part, not made by sowing the Grass Seed, but by laying Turfs; and, indeed, the Turfs from a fine Common or Down, are much preferable to sown Grass.

In sowing a fine green Plat, there is a Difficulty in getting good Seed; it ought not to be such as is taken out of a Hay Loft, without Distinction, for that Seed shooting too high and making large Stalks, the lower Part will be naked and bare; and although it be mowed

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ever so often, it will never make handsome Grass; but, on the contrary, will come to nothing but Tufts of Weeds and Quick Grass, very little better than that of the common Fields.

If Walks or Plats be made by sowing, the best Way is to procure the Seed from those Pastures where the Grass is naturally fine and clear, or else the Trouble of keeping it from spiry and benty Grass will be very great, and it will scarce ever look handsome.

In order to sow Grass Seed, the Ground must be first dug or broken up with a Spade; and when it has been dressed and laid even, it must be very finely raked over, and all the Clods and Stones taken off, and covered over an Inch thick with good Mould, to facilitate the Growth of the Seed; this being done, the Seed is to be sown pretty thick, that it may come up close and short; and it must be raked over again to bury and cover the Seed, that if the Weather should happen to be windy, it may not be blown away.

As to the Season of sowing Grass, the Middle or latter End of *August* is a good Time, because the Seed naturally requires nothing but Moisture to make it grow: If it be not sown till the latter End of *February*, or the Beginning of *March*, if the Weather proves dry, it will not so soon make the Walks or Quarters green. It is also best to sow it in a mild Day, inclining to Rain; for that, by sinking down the Seed in the Earth, will cause it to shoot the sooner. But where Grass is sown in Gardens, either for Lawns or Walks, there should always be a good Quantity of the white Trefoil or Dutch Clover sown with it, for this will make a fine Turf much sooner than any other sown Grass, and will continue a better Verdure than any of the Grass Tribe.

After the Seed is well come up, and the Grass is very thick and of a beautiful green, it will require a constant Care to keep it in Order: This consists in mowing the Grass often, for the oftener it is mowed, the thicker and handsomer it grows; it must also be rolled with a Cylinder or Roller of Wood, to level it as much as possible.

If Grass be neglected, it will run into Quick Grass and Weeds; and if it does so, there is no Way to recover it, but either by sowing it, or laying it over again, and that once in every two Years; but if the Ground be well cleared from the Roots of strong Weeds, and the Turf be taken from a fine level Common, it will continue handsome for several Years, provided it be well kept.

In order to keep Grass Plats or Walks handsome and in good Order, in Autumn you may sow some fresh Seed over any Places that are not well filled, or where the Grass is dead, to renew and furnish them again; but there is nothing which improves Grass so much as constant rolling and polling it, to destroy Wormcasts, and thereby the Turf is rendered fine.

It is a general Practice when Turf is laid in Gardens, to cover the Surface of the Ground under the Turf, either with Sand, or very poor Earth; the Design of this is to keep the Grass fine, by preventing its growing too rank. This is proper enough for very rich Ground, but is not so for such Land as is but middling or poor; for when this is practised in such Places, the Grass will soon wear out, and decay in Patches.

When Turf is taken from a Common or Down, there

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should be Regard had to the Cleanness of it, and not to take such as is full of Weeds; for it will be a very tedious Piece of Work, to weed them out after the Turf is laid; and unless this is done, the Grass will never appear handsome.

Where Turf is designed to remain for Years without renewing, there should be Dressing laid upon it every other Year, either of very rotten Dung, Ashes, or, where it can be easily procured, very rotten Tan, is a good Dressing for Grass; but these Dressings should be laid on early in Winter, that the Rain may wash them into the Ground, before the Drought of the Spring comes on; otherwise they will occasion the Grass to burn, when the Warmth of Summer begins. Where Grass is so dressed, and kept well rolled and mowed, it may be kept very beautiful for many Years; but where it is not dressed or fed with Sheep, it will rarely continue handsome more than eight or ten Years.

GRATIOLA. *Lin. Gen. Pl.* 27. *Raii Meth. Plant.* 90. *Digitalis. Tourn. Inst. R. H.* 165. Hedge Hyssop.

The Characters are,

The Flower hath a permanent Emplacement, cut into 5 Parts; it hath 1 Petal of the grinning Kind, with a Tube longer than the Emplacement, cut at the Top into 4 small Segments, the upper being broader and indented at the End where it is reflexed, the other 3 are erect and equal. It hath 5 Awl-shaped Stamina, 3 of which are shorter than the Petal, and sterile; the other 2 are longer, and adhere to the Tube of the Petal; these are fruitful in male Dust; they are terminated by roundish Summits. In the Center is situated a conical Germen, supporting an erect Style, crowned by a Stigma with two Lips, which close after being sacculated. The Germen becomes an oval Capsule ending in a Point, having two Cells filled with small Seeds.

The Species are,

1. GRATIOLA *floribus pedunculatis, foliis lanceolatis serratis. Lin. Mat. Med.* 18. Hedge Hyssop with Flowers standing on Foot Stalks, and Spear-shaped sawed Leaves. *Digitalis minima Gratiola dista. Mor. Hist.* 2. 479. Least Foxglove, called Gratiola.

2. GRATIOLA *foliis lanceolatis obtusis sub dentatis. Flor. Virg.* 6. Hedge Hyssop with obtuse indented Leaves.

3. GRATIOLA *floribus subsessilibus. Lin. Sp. Pl.* 17. Hedge Hyssop with Flowers sitting close to the Branches.

The 1st Sort grows naturally on the Alps, and other mountainous Parts of Europe. This hath a thick, fleshy, fibrous, creeping Root, which propagates very much when planted in a proper Soil and Situation, from which arise several upright square Stalks, near a Foot high, garnished with narrow Spear-shaped Leaves placed opposite; the Flowers are produced on the Side of the Stalks at each Joint, they are shaped like those of the Foxglove, but are small, and of a pale yellowish Colour. These appear in July, but are seldom succeeded by Seeds in England.

It is easily propagated by parting the Roots; the best Time to do this is in Autumn, when the Stalks decay; the Plants should have a moist Soil and a shady Situation, in which they will thrive exceedingly; but in dry Ground they often decay in Summer, unless plentifully watered.

This stands in the List of medicinal Plants, but is very

very rarely used in *England*, though it is recommended by some good Writers as a Purger of ferous and chole-
rick Humours.

The 2d Sort grows in *North America*, from whence I received the Seeds. This grows naturally in moist Places, where it rises more than a Foot high, but in *England* I have not seen it more than eight Inches; the Leaves are blunt and indented at their Extremities; the Flowers are white, and come out from the Side of the Stalks, like those of the other, but are not succeeded by Seeds here. It may be propagated as the first Sort, and requires the same Treatment.

The Seeds of the 3d Sort were sent me from *Cartbagen*, where it was found growing naturally in Places where there had been standing Waters, which were then dried up; this Plant grew about 9 Inches high, with a weak Stalk, and the Leaves placed opposite; they were about three Quarters of an Inch long, and half an Inch broad, sawed on their Edges; the Flowers came out single on each Side the Stalk, they were white, and much smaller than those of the first Sort, but were not succeeded by Seeds, so the Plant was lost here.

GRAVEL and Grass are naturally Ornaments to a Country Seat, and the Glory of the *English* Gardens, and Things in which we excel all other Nations, as *France, Holland, Flanders, &c.*

There are different Sorts of Gravel, but for those who can conveniently have it, I approve of that Gravel on *Blackheath*, as preferable to most that we have in *England*; it consisting of smooth even Pebbles, which, when mixed with a due Quantity of Loam, will bind exceeding close, and look very beautiful, and continue handsome longer than any other Sort of Gravel which I have yet seen.

Some recommend a Sort of Iron-mould Gravel, or Gravel with a little binding Loam amongst it, than which nothing, they say, binds better when it is dry; but in wet Weather it is apt to stick to the Heels of one's Shoes, and will never appear handsome.

Sometimes Loam is mixed with Gravel that is over sandy or sharp, which must be very well blended together, and let lie in Heaps, after which it will bind like a Rock.

There are many Kinds of Gravel which do not bind, and thereby cause a continual Trouble of rolling, to little or no Purpose; as for such,

If the Gravel be loose, or sandy, you should take one Load of strong Loam, to two or three of Gravel, and so cast them well together, and turn this Mixture over three or four Times, that they may be well blended together; if this is done in proper Proportion, it will bind well, and not stick to the Feet in wet Weather.

There are many different Opinions about the Choice of Gravel; some are for having the Gravel as white as possible, and in order to make the Walks more so, they roll them well with Stone Rollers, which are often hewn by the Masons, that they may add a Whiteness to the Walks; but this renders it very troublesome to the Eyes, by reflecting the Rays of Light so strongly, therefore this should ever be avoided, and such Gravel as will lie smooth, and reflect the least, should be preferred.

Some screen the Gravel too fine, which is an Error;

for if it be cast into a round Heap, and the great Stones only raked off, it will be the better.

Some are apt to lay Gravel Walks too round, but this is likewise an Error, because they are not so good to walk upon, and, besides, it makes them look narrow; one Inch Rise is enough in a Crown for a Walk of five Feet, and it will be sufficient, if a Walk be ten Feet wide, that it lies two Inches higher in the Middle than it does on each Side; if fifteen Feet, three Inches; twenty Feet, four, and so in Proportion.

For the Depth of Gravel Walks, 6 or 8 Inches may do well enough, but a Foot Thickness will be sufficient for any, but then there should always be a Depth of Rubbish laid under the Gravel, especially if the Ground is wet, in which Case there cannot be too much Care to fill the Bottom of the Walks with large Stones, Flints, Brick Rubbish, Chalk, or any other Materials which can be best procured, which will drain off the Moisture from the Gravel, and prevent its being poachy in wet Weather; but as it may be difficult in some Places to procure a sufficient Quantity of these Materials to lay in the Bottom of the Walks, so there may be a Bed of Heath, or Furze, which ever can be procured at the least Expence, laid under the Gravel to keep it dry: and if either of these are used green, they will lie a long Time, as they will be covered from Air, and these will prevent the Gravel from getting down into the Clay, and will always keep the Gravel dry, and where there is not this Precaution in the first laying of Gravel upon Clay, the Water being detained by the Clay, will cause the Gravel to be poachy whenever there is much Rain.

In the making of Gravel Walks, there must be great Regard had to the Level of the Ground, so as to lay the Walks with easy Descents toward the low Parts of the Ground, that the Wet may be drained off easily, for when this is omitted, the Water will lie upon the Walks a considerable Time after hard Rains, which will render them unfit for Use, especially where the Ground is naturally wet or strong; but where the Ground is level, and there are no Declivities to carry off the Wet, it will be proper to have Sink Stones laid by the Sides of the Walks, at convenient Distances, to let off the Wet, and where the Ground is naturally dry, that the Water will soon soak away, the Drains from the Sink Stones may be contrived so as to convey the Water in Sesspools, from which the Water will soak away in a short Time; but in wet Land there should be under-ground Drains, to convey the Wet off, either into Ponds, Ditches, or the nearest Place to receive it, for where this is not well provided for, the Walks will never be so handsome or useful.

The Month of *March* is the properest Time for laying Gravel; it is not prudent to do it sooner, or to lay Walks in any of the Winter Months before that Time.

Some indeed turn up Gravel Walks in Ridges in *December*, in order to kill the Weeds, but this is very wrong, for besides that it deprives them of the Benefit of them all the Winter, it does not answer the End for which it is done, but rather the contrary; for though it does kill the Weeds for the present, yet it adds a Fertility to them; as to the great future Increase of both them and Grass.

If constant rolling them after the Rains and Frost will

not effectually kill the Weeds and Moss, you should turn the Walks in *March*, and lay them down at the same Time.

In order to destroy Worms that spoil the Beauty of Gravel, or Grass Walks, some recommend the watering them well with Water, in which Walnut Tree Leaves have been steeped, and made very bitter, especially those Places most annoyed with them, and this, they say, as soon as it reaches them, will make them come out hastily, so that they may be gathered; but if, in the first laying of the Walks, there is a good Bed of Lime Rubbish laid in the Bottom, it is the most effectual Method to keep out the Worms, for they do not care to harbour near Lime.

GREEN-HOUSE, or Conservatory.

As of late Years there have been great Quantities of curious exotic Plants introduced into the *English* Gardens, so the Number of Green-houses, or Conservatories, has increased, and not only a greater Skill in the Management and Ordering of these Plants has increased therewith, but also a greater Knowledge of the Structure and Contrivance of these Places, so as to render them both useful and ornamental, hath been acquired; and since there are many Particulars to be observed in the Construction of these Houses, whereby they will be greatly improved, I thought it necessary not only to give the best Instructions for this I was capable of, but also to give a Design of one in the Manner I would choose to erect it, upon the annexed Copper Plate.

As to the Length of these Houses, that must be proportioned to the Number of Plants they are to contain, or the Fancy of the Owner, but their Depth should never be greater than their Height in the Clear, which in small, or middling Houses, may be 16 or 18 Feet, but for large ones, from 20 to 24 Feet, is a good Proportion, for if the Green-house is long, and too narrow, it will have a bad Appearance both within and without, nor will it contain so many Plants, if proper Room be allowed for passing in Front, and on the Backside of the Stands on which the Plants are placed; and, on the other Hand, if the Depth of the Green-house is more than 24 Feet, there must be more Rows of Plants placed to fill the House, that can with Convenience be reached in Watering and Cleaning, nor are Houses of too great Depth so proper for keeping Plants, as those of moderate Size.

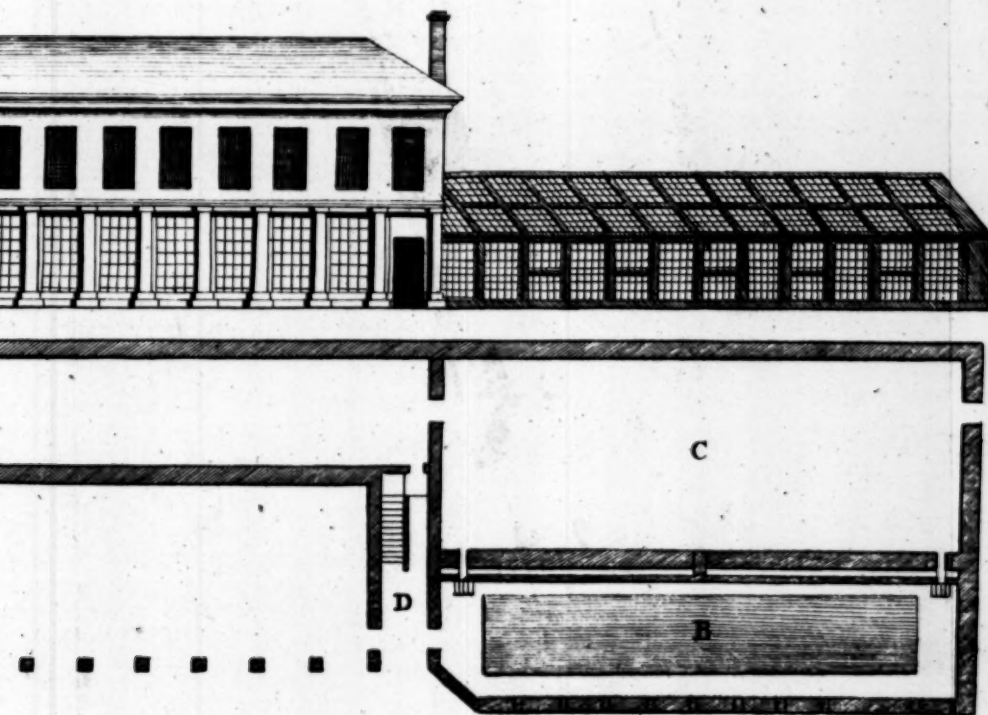
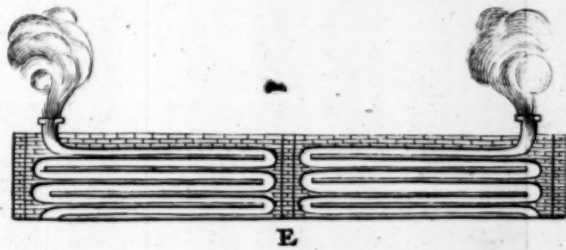
The Windows in Front should extend from about one Foot and a Half above the Pavement, to within the same Distance of the Ceiling, which will admit of a Cornice round the Building, over the Heads of the Windows. As it is necessary to have these Windows so long, it will be impossible to make them in Proportion to their Breadth; for if in the largest Buildings the Sashes are more than 7, or 7 Feet and a Half broad, they will be so heavy, and troublesome to move up and down, as to render it very difficult for one Person to perform; besides, their Weight will occasion their soon decaying. There is also another Inconvenience in having the Windows too broad, which is, that of fixing proper Shutters to them, in such a Manner, that they may fall back close to the Piers, so as not to be incommodious, or, when open, to obstruct any Part of the Rays of Light from reaching the Plants. The

Piers between these Windows should be as narrow as possible to support the Building, for which Reason I should choose to have them of Stone, or of hard well-burnt Bricks, for if they are built with fine rubbed Bricks, those are generally so soft, that the Piers will require to be made thicker, and the Building will be in Danger of falling in a short Time, especially if you have any Rooms over the Green-house; which is what I would always advise, as being of great Use to keep the Frost out in very hard Winters. If these Piers are made of Stone, I would advise them to be 2 Feet and a Half in Front, and sloped off backward to about eighteen Inches broad, whereby the Rays of the Sun will not be taken off, or obstructed by the Corners of the Piers, which it would be if they were square; but if they are built with Bricks, it will be proper to make them 3 Feet in Front, otherwise they will be too weak to support the Building; these I would also advise to be sloped off in the Manner directed for the Stone.

At the Back of the Green-house there may be erected a House for Tools, and many other Purposes, which will be extremely useful, and also prevent the Frost from entering the House that Way, so that the Wall between these need not be more than two Bricks and a Half in Thickness, whereas, were it quite exposed behind, it should be at least three Bricks in Thickness; and by this Contrivance, if you are willing to make a handsome Building, and to have a noble Room over the Green-house, you may make the Room over the Tool House, and carry up the Stair Case in the Back, so as not to be seen in the Green-house, and hereby you may have a Room 25, or 30 Feet in Width, and of a proportionable Length; and under this Stair Case there should be a private Door into the Green-house, at which the Gardener may enter in hard frosty Weather, when it will not be safe to open any of the Glasses in the Front. The Floor of the Green-house, which should be laid either with *Bremen* Squares, *Purbeck* Stone, or broad Tiles, according to the Fancy of the Owner, must be raised 2 Feet above the Surface of the Ground whereon the House is placed, which, in dry Ground, will be sufficient; but if the Situation be moist and springy, and thereby subject to Damps, it should be raised at least 3 Feet above the Surface, and if the Whole is arched with low Brick Arches under the Floor, it will be of great Service in preventing the Damps rising in Winter, which are often very hurtful to the Plants, especially in great Thaws, when the Air is often too cold to be admitted into the House, to take off the Damps. Under the Floor, about 2 Feet from the Front, I would advise a Flue of about 10 Inches in Width, and 2 Feet deep, to be carried the whole Length of the House, which may be returned along the back Part, and be carried up in proper Funnel's adjoining to the Tool House, by which the Smoke may pass off. The Fire Place may be contrived at one End of the House, and the Door at which the Fuel is put in, as also the Ash Grate, may be contrived to open into the Tool House, so that it may be quite hid from the Sight, and be in the Dry, and the Fuel may be laid in the same Place, whereby it will always be ready for Use.

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Geo. Dyson, Architect

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I suppose many People will be surpris'd to see me direct the making Flues under a Green-house, which has been disus'd so long, and by most People thought of ill Consequence, as indeed they have often proved, when under the Direction of unskilful Managers, who have thought it necessary, whenever the Weather was cold to make Fires therein; but however injurious Flues have been under such Management, yet, when skilfully managed, they are of very great Service; for though, it may happen, that there will be no Necessity to make any Fires in them for two or three Years together, when the Winters prove mild, yet in very hard Winters they will be extremely useful to keep out the Frost, which cannot be effected any other Way, but with great Trouble and Difficulty.

Withinside the Windows, in Front of the Green-house, you should have good strong Shutters made with Hinges, to fold back, that they may fall back quite close to the Piers, that the Rays of the Sun may not be obstructed thereby. These Shutters need not be above an Inch and a Half thick, or little more, when wrought, which, if made to join close, will be sufficient to keep out our common Frost; and when the Weather is so cold as to endanger the freezing in the House, it is but making a Fire in your Flue, which will effectually prevent it, and without this Conveniency it will be very troublesome, as I have often seen, where Persons have been obliged to nail Mats before their Windows, or to stuff the hollow Space between the Shutters and the Glasse with Straw, which, when done, is commonly suffered to remain till the Frost goes away, which if it should continue very long, the keeping the Green-house closely shut up, will prove very injurious to the Plants; and as it frequently happens, that we have an Hour or two of the Sun-shine in the Middle of the Day, in continued Frosts, which is of great Service to Plants, when they can enjoy the Rays thereof through the Glasses, so, when there is nothing more to do than to open the Shutters, which may be performed in a very short Time, and as soon shut again when the Sun is clouded, the Plants may have the Benefit thereof whenever it appears; whereas, where there is so much Trouble to uncover, and as much to cover again, it would take up the whole Time in uncovering and shutting them up, and thereby the Advantage of the Sun's Influence would be lost. Besides, where there is so much Trouble required to keep out the Frost, it will be a great Chance if it be not neglected by the Gardener; for if he be not as fond of preserving his Plants, and as much in love with them, as his Master, this Labour will be thought too great by him, and if he takes the Pains to cover the Glasses up with Mats, &c. he will not care to take them away again until the Weather alters, so that the Plants will be shut up close during the whole Continuance of the Frost.

There are some People who commonly make use of Pots filled with Charcoal to set in their Green-houses in very severe Frosts, but this is very dangerous to the Persons who attend these Fires, who I have often known almost suffocated therewith, and at the same Time they are very injurious to the Plants; nor is the Trouble of tending these small, and dangerous Hazards to which the Use of these Fires is liable, have justly brought them into Disuse with all skilful

Persons, and as the Contrivances of Flues, and of the Fires, are but small Charges, they are much to be preferred to any other Method for warming the Air of the House.

The back Part of the House should be either laid over with Stucco, or plastered with Mortar, and white washed, for otherwise the Air in severe Frost will penetrate through the Walls, especially when the Frost is attended with a strong Wind, which is often the Case in most severe Winters. There are some Persons who are at the Expence of wainscoting their Green-houses, but when this is done, it is proper to plaster the Walls with Lime and Hair behind the Wainscot, to keep out the Cold, and when they are lined with Wainscot, they should be painted white, as should the Cieling, and every Part withinside the House; for this reflects the Rays of Light in a much greater Quantity than any other Colour, and is of signal Service to Plants, especially in the Winter, when the House is pretty much closed, and but a small Share of Light is admitted through the Windows; for at such Times I have observed, that in some Green-houses which have been painted black, or of a dark Colour, the Plants have cast most of their Leaves.

Where Green-houses are built in such Places as will not admit of Rooms over them, or the Person is unwilling to be at the Expence of such Buildings, there must be Care taken to keep out the Frost from entering through the Roof. To prevent which it will be very proper to have a Thickness of Reeds, Heath, or Furz, laid between the Cieling and the Tiles; in doing which there must be Care taken in framing the Joists, so as to support these, that their Weight may not lie upon the Cieling, which might endanger it; for these should be laid a Foot thick at least, and as smooth as possible, and fastened down well with Laths to prevent their rising, and then covered over with a Coat of Lime and Hair, which will keep out the Air, and also prevent Mice, and other Vermin, from harbouring in them, which, if left uncovered, they would certainly do. For Want of this Precaution there are many Green-houses built, which will not keep out the Frost in hard Winters, and this is many Times attributed to the Glasses in Front admitting the Cold, when the Fault is in the Roof; for where there is only the Covering, either of Tiles, or Slates, and the Cieling, every severe Frost will penetrate through them.

In this Green-house you should have Trossels, which may be moved out and into the House, upon which you should fix Rows of Planks, so as to place the Pots, or Tubs of Plants in regular Rows one above another, whereby the Heads of the Plants may be so situated, as not to interfere with each other. The lowest Row of Plants, which should be the forwardest towards the Windows, should be placed about 4 Feet therefrom, that there may be a convenient Breadth left next the Glasses to walk in Front; and the Rows of Plants should rise gradually from the first, in such a Manner, that the Heads of the second Row should be entirely advanced above the first, the Stems only being hid thereby; and at the back Side of the House there should be allowed a Space of at least 5 Feet, for the Conveniency of watering the Plants, as also to admit of a

Current

Current of Air round them, that the Damps occasioned by the Perspiration of the Plants, may be the better dissipated, which by being pent in too closely, often occasions a Mouldiness upon the tender Shoots and Leaves, and when the House is close shut up, this stagnating rancid Vapour is often very destructive to the Plants; for which Reason also you should never crowd them too close to each other, nor should you ever place Sedums, Euphorbiums, Torch Thistles, and other tender succulent Plants, amongst Oranges, Myrtles, and other ever-green Trees; for, by an Experiment which I made, *Anno 1729*, I found that a Sedum, placed in a Green-house among such Trees, almost daily increased its Weight, although there was no Water given to it the whole Time; which Increase of Weight was owing to the Moisture imbibed from the Air, which, being replete with the rancid Vapours perspired from the other Plants, occasioned the Leaves to grow pale, and in a short Time they decayed, and dropped off; which I have often observed has been the Case with many other succulent Plants, when placed in those Houses which were filled with many Sorts of ever-green Trees, that required to be frequently watered.

Therefore, to avoid the Inconvenience which attends the placing Plants of very different Natures in the same House, it will be very proper to have two Wings added to the main Green-house, which, if placed in the Manner expressed in the annexed Plan, will greatly add to the Beauty of the Building, and also collect a greater Share of Heat. In this Plan the Green-house is placed exactly fronting the South, and one of the Wings faces the South East, and the other the South West; so that from the Time of the Sun's first Appearance upon any Part of the Building, until it goes off at Night, it is constantly reflected from one Part to the other, and the cold Winds are also kept off from the Front of the main Green-house hereby; and in the Area of this Place you may contrive to place many of the most tender exotick Plants, which will bear to be exposed in the Summer Season; and in the Spring, before the Weather will permit you to set out the Plants, the Beds and Borders of this Area may be full of Anemonies, Ranunculuses, early Tulips, &c. which will be past flowering, and the Roots fit to take out of the Ground by the Time you carry out the Plants, which will render this Place very agreeable during the Spring Season that the Flowers are blown, and here you may walk and divert yourself in a fine Day, when, perhaps, the Air in most other Parts of the Garden will be too cold for Persons not much used thereto, to take Pleasure in being out of the House.

In the Centre of this Area may be contrived a small Basin for Water, which will be very convenient for watering Plants, and add much to the Beauty of the Place; besides, the Water, thus situated, will be softened by the Heat reflected from the Glasses upon it, whereby it will be rendered much better than raw cold Water for these tender Plants.

The two Wings of the Building should be contrived so as to maintain Plants of different Degrees of Hardiness, which must be effected by the Situation and Extent of the Fire-place, and the Manner of conducting the Flues, a particular Account of which will be exhibited

under the Article *Stoves*. But I would here observe, that the Wing facing the South East should always be preferred for the warmest Stove, its Situation being such, that the Sun, on its first Appearance in the Morning, shines directly upon the Glasses, which is of great Service in warming the Air of the House, and adding Life to the Plants, after having been shut up during the long Nights in the Winter Season. These Wings, being, in the Draught annexed, allowed 60 Feet in Length, may be divided in the Middle by Partitions of Glass, with Glass Doors to pass from one to the other. To each of these there should be a Fire Place, with Flues carried up against the back Wall, through which the Smoke should be made to pass, as many Times the Length of the House, as the Height will admit of the Number of Flues; for the longer the Smoke is in passing, the more Heat will be given to the House, with a less Quantity of Fuel, which is an Article worth Consideration, especially where Fuel is dear. By this Contrivance you may keep such Plants as require the same Degree of Heat in one Part of the House, and those which will thrive in a much less Warmth in the other Part, but this will be more fully explained under the Article *Stoves*.

The other Wing of the House, facing the South West, may also be divided in the same Manner, and Flues carried through both Parts, which may be used according to the Seasons, or the particular Sorts of Plants which are placed therein, so that here will be 4 Divisions in the Wings, each of which may be kept up to a different Degree of Warmth, which, together with the Green-house, will be sufficient to maintain Plants from all the several Countries of the World; and without having these several Degrees of Warmth, it will be impossible to preserve the various Kinds of Plants from the several Parts of *Africa* and *America*, which are annually introduced into the *English* Gardens; for when Plants from different Countries are placed in the same House, some are destroyed for Want of Heat, while others are forced and spoiled by too much of it, and this is often the Case in many Places, where there are large Collections of Plants.

In building these Wings, if there are not Sheds running behind them, their whole Length, the Walls should not be less than three Bricks thick, and if they are more, it will be better, because, where the Walls are thin, and exposed to the open Air, the Cold will penetrate them, and when the Fires are made, the Heat will come out through the Walls, so that it will require a larger Quantity of Fuel, to maintain a proper Temperature of Warmth in the House. The back Part of these Houses, having sloping Roofs, which are covered either with Tiles or Slates, should also be lined with Reeds, &c. under the Covering, as is before directed for the Green-house, which will keep out the cold Air, and save a great Expence of Fuel; for the closer and better these Houses are built, and the Glasses of the Slope, as also in Front, well guarded by Shutters, or Reeds, in hard Frost, the less Fuel will be required to warm the Houses, so that the first Expence in building these Houses properly, will be the cheapest, when the after Expence of Fires is taken into Consideration.

The sloping Glasses of these Houses should be made

to slide, and take off, so that they may be drawn down more or less, in warm Weather, to admit Air to the Plants, and the upright Glasses in Front may be so contrived, as that every other may open as Doors upon Hinges, and the alternate Glasses may be divided into two; the upper Part of each should be contrived so as to be drawn down like Sashes, so that either of these may be used to admit Air, in a greater or less Quantity, according as there may be Occasion.

But besides the Conservatories here mentioned, it will be proper to have a deep hot Bed Frame, such as is commonly used to raise large Annuals in the Spring, into which may be set Pots of such Plants as come from *Carolina*, *Virginia*, &c. while the Plants are too small to plant in the open Air, as also many other Sorts from *Spain*, &c. which require only to be screened from the Violence of Frosts, and should have as much free Air as possible in mild Weather, which can be no better effected than in one of these Frames, where the Glasses may be taken off every Day when the Weather will permit, and put on every Night; and in hard Frosts the Glasses may be covered with Mats, Straw, Peas Haulm, or the like, to prevent the Frost from entering the Pots to freeze the Roots of the Plants, which is what will, many Times, utterly destroy them, though a slight Frost pinching the Leaves, or Shoots, very seldom does them much Harm; if these are sunk a Foot, or more, below the Surface of the Ground, they will be the better, provided the Ground is dry, otherwise they must be wholly above Ground; the Sides of this Frame should be built with Brick, with a Curb of Wood laid round on the Top of the Wall, into which the Gutters, on which the Glasses slide, may be laid; the back Wall of this Frame may be 4 Feet high, and the Front one Foot and a Half; the Width about 6 Feet, and the Length in Proportion to the Number of Plants.

GREWIA. *Lin. Gen. Pl.* 914.

The Characters are,

The Flower has a thick leathery Empalement, composed of 5 Spear-shaped Leaves, which are coloured, and spread open. The Flower hath 5 Petals of the same Form, but smaller, and indented at their Base, where is situated a scaly Nectarium to each Petal, which is thick and incurved, inclining to the Border, to which the Style is fixed; it hath many Stamina, which are bristly, and the Length of the Petals, terminated by roundish Summits. In the Center is situated the roundish Germen, which is lengthened to a Column, supporting a slender Style, crowned by a four-cornered obtuse Stigma. The Germen afterward becomes a four-cornered Berry with 4 Cells, each inclosing one globular Seed.

The Species are,

1. GREWIA *foliis subovatis crenatis*. Grewia with oval crenated Leaves. *Ulmæ facie arbuscula Æthiopica, ramulis alatis, floribus purpurascens*. Hort. Amst. 1. p. 165. Tab. 85. Ethiopian Shrub with the Appearance of Elm, winged Branches, and purplish Flowers.

2. GREWIA *foliis ovato-lanceolatis serratis*. Grewia with oval Spear-shaped Leaves, which are sawed.

The 1st Sort has been long preserved in many curious Gardens, both in England and Holland, and is figured by Dr. Plukenet, by the Title of *Ulmifolia arbor Africana*

baccifera, floribus purpureis, but by Dr. Boerhaave it was supposed to be one of Father Plumier's American Plants, entitled, *Guidonia Ulmi foliis, flore roseo*; but the Characters of this do not at all agree with those of the *Guidonia*, that particular Species of the Genus being in the Royal Garden at Paris, which is extremely different from this. It grows naturally at the Cape of Good Hope, from whence I have received the Seeds, which have succeeded in the Chelsea Garden.

This will grow to the Height of 10 or 12 Feet, and has a Stem and Branches very like those of the small-leaved Elm, the Bark being smooth, and of the same Colour as that of Elm when young; the Leaves are also very like those of the Elm, and fall off in Autumn; the Flowers are produced singly along the young Branches, from the Wings of the Leaves, which are of a bright purple Colour; these appear toward the End of July, and continue in August, and the Beginning of September, but are never succeeded by Fruit in this Country.

This may be propagated from Cuttings, or Layers; the Cuttings should be taken off, and planted in March, before the Buds begin to swell, for they do not succeed well after; these Cuttings should be planted in small Pots filled with loamy Earth, and the Pots should be plunged into a moderate hot Bed of Tanners Bark, where, if they are duly watered, and in the Middle of the Day shaded from the Sun, they will have taken good Root in about two Months, and may then be gradually inured to bear the open Air, into which they should be removed in June, and placed in a sheltered Situation, where they may remain till Autumn, when they must be removed into the Green-house; the best Time to lay down the Layers of this Plant is in the Spring, before the Buds come out, and these will be rooted by the same Time the following Year, when they may be cut off from the old Plants, and planted each into a separate Pot filled with a soft loamy Soil.

The best Time to remove or transplant this Plant is, either in the Spring, just before the Buds begin to swell, or in Autumn, when the Leaves begin to drop; for in Summer, when the Plants are in full Leaf, it will be very improper to disturb them.

In Winter these Plants should be placed in the Green-house, for they are too tender to live abroad in England; but they should have as much free Air as possible in mild Weather, for they only require to be protected from Frost, and after their Leaves are fallen, they will require very moderate Watering, but in Summer they should be constantly watered 3 or 4 Times a Week in dry Weather, and placed in a sheltered Situation, with other hardy Green-house Plants, where they will add to the Variety.

The Seeds of the 2d Sort were sent me by Mons. Ricard, Gardener to the King of France, at Marseilles, which were brought from Senegal, in Africa, by Mons. Adanson; this rises in this Country with a shrubby Stalk, 5 or 6 Feet high, sending out many lateral Branches, covered with a brown hairy Bark, and garnished with oval Spear-shaped Leaves, about 2 Inches long, and one Inch and a Quarter broad in the Middle, having several transverse Veins from the Mid-rib to the Sides, where they are sawed; these are placed alternately on the Branches,

Branches, having very short Foot Stalks, and continue in Verdure through the Year; the Plants are young, so have not as yet flowered in England, therefore I can give no further Account of them.

This Sort is tender, so will not live through the Winter in England, unless it is placed in a warm Stove; nor do those Plants thrive well, which are placed on Shelves in the dry Stove; therefore the only Method to have them succeed, is to place them in the Bark Bed in the Tan Stove, where the Plants have grown very well the two last Years. In Summer these Plants require a good Share of free Air to be admitted to them, and should have Water 3 or 4 Times a Week in warm Weather; but in Winter they must be sparingly watered, and require to be kept warm.

GRONOVIA. Martyn. Gent. 4. Lin. Gen. Pl. 248.

The Characters are,

The Flower hath a permanent Empalement of 1 Leaf, cut to the Middle into 5 Parts, and is coloured. It hath 5 small Petals fixed to the Cuts of the Empalement, and 5 hairy Stamina the Length of the Petals, inserted into the Empalement, and placed alternate with the Petals, terminated by Twin Summits, which are erect. The Germen is situated under the Flower, supporting a slender Style longer than the Stamina, crowned by an obtuse Stigma. The Germen becomes a roundish coloured Fruit with one Cell, inclosing one large roundish Seed.

We know but one Species of this Genus, viz.

GRONOVIA. Hort. Cliff. 74. Gronovia. This is the Gronovia scandens lappacea, pampinea fronde. Houfl. Climbing Burry Gronovia.

This Plant was discovered by the late Dr. Houstoun at La Vera Cruz, from whence he sent the Seeds to Europe, which have succeeded in many Gardens. It is an annual Plant, which sends forth many trailing Branches, like those of the Cucumber, closely set with broad green Leaves, in Shape like those of the Vine; but they are covered with small Spines on both Sides, which sting like the Nettle; the Branches have many Tendrils or Claspers, by which they fasten themselves to whatever Plants they grow near, and will rise to the Height of 6 or 8 Feet; the Flowers are small, and of a greenish yellow Colour, so make no great Appearance.

This being a very tender Plant, must be raised on a hot Bed early in the Spring, and afterward placed in the Bark Stove, and treated as the *Momordica*, with which Management it will produce ripe Seeds; but this, having neither Use or Beauty, is rarely cultivated but in Botanical Gardens, for Variety.

GROSSULARIA. Raii Meth. Pl. 145. Tourn. Inst. R. H. 639. Tab. 409. Ribes. Lin. Gen. Pl. 247. Gooseberry; in French, Groselier.

The Characters are,

The Flower has a permanent Empalement of 1 Leaf, cut into five Parts at the Top, which is swollen, concave, and coloured. It hath 5 small, obtuse, erect Petals, which rise from the Border of the Empalement; it hath 5 Awl-shaped Stamina, inserted into the Empalement, terminated by compressed prostrate Summits. The Germen is situated below the Flower, having a bifid Style crowned by an obtuse Stigma, and afterward becomes a globular Berry having a Nerve, with one Cell filled with roundish compressed Seeds enclosed in a Pulp.

The Species are,

1. GROSSULARIA ramis reclinatis aculeatis, pedunculis triphyllis. Gooseberry with reclining Branches armed with Spines, and a three-leaved Foot Stalk. *Grossularia spinosa, fructu obscure purpurascens*. J. B. 1. 48. Prickly Gooseberry with a dark purplish Fruit.

2. GROSSULARIA ramis aculeatis, baccis hirsutis. Gooseberry with prickly Branches and hairy Berries. *Grossularia fructu maximo bispido margaritarum ferè colore*. Raii Hist. 1484. Gooseberry with a very large rough Fruit, almost of a Pearl Colour.

3. GROSSULARIA ramis aculeatis, erectis, baccis glabris. Gooseberry with erect prickly Branches, and smooth Berries. *Grossularia simplici acino, vel spinosa sylvestris*. C. B. P. 455. Gooseberry with a single Fruit, or wild prickly Gooseberry.

4. GROSSULARIA ramis undique aculeatis. Gooseberry whose Branches are armed on all Sides with Spines. *Grossularia oxyacanthæ foliis amplioribus è sinu Hudsonis*. Pluk. Amaltb. 212. Gooseberry with larger Hawthorn Leaves from Hudson's Bay.

5. GROSSULARIA aculeis subaxillaribus, baccis aculeatis racemosis. Gooseberry with Spines on the lower Part of the Branches, and prickly Berries growing in Clusters. *Ribes aculeis subaxillaribus, baccis aculeatis racemosis*. Lin. Sp. Pl. 202. Currant with Spines on the lower Part of the Branches, and prickly Berries growing in Bunches.

The Sorts here enumerated, are supposed to be distinct Species, but there are several other Varieties which have been obtained from Seeds, and are propagated for Sale in the Nurseries; most of these are raised from the Persons who raised them, as Lamb's Gooseberry, Hunt's Gooseberry, Edwards's Gooseberry, &c. and as there are frequently new Varieties obtained, it is needless to enumerate them here, therefore I shall proceed to their Culture.

These are propagated either by Suckers taken from the old Plants, or by Cuttings; the latter of which I prefer to the former, because those Plants produced from Suckers are always more disposed to shoot out a greater Number of Suckers than those raised from Cuttings, which generally form much better Roots.

The best Season for planting these Cuttings is in Autumn, just before their Leaves begin to fall; observing always to take the handsomest Shoots, and from such Branches as generally produce the greatest Quantity of Fruit; for if you take those which are produced from the Stem of the old Plants (which are commonly very luxuriant) they will not be near so fruitful as those taken from bearing Branches: These Cuttings should be about 6 or 8 Inches long, and must be planted in a Border of light Earth, exposed to the Morning Sun, about 3 Inches deep, observing to water them gently, when the Weather proves dry, to facilitate their taking Root; and in the Summer, when they have put out, you should rub off all the under Shoots, leaving only the uppermost or strongest, which should be trained upright, to form a regular Stem. In October following, these Plants will be fit to remove; at which Time you should prepare an open Spot of fresh Earth, which should be well dug and cleansed from all noxious Weeds, Roots, &c. and being levelled, you should proceed to take up your

Plants,

Plants, trimming their Roots, and cutting off all lateral Branches; then plant them at 3 Feet Distance Row from Row, and one Foot asunder in the Rows, observing to place some short Sticks to the Plants, in order to train their Stems upright and regular. In this Place they may remain one Year, being careful to keep them clear from Weeds, as also to trim off all lateral Shoots which are produced below the Head of the Plant, so that the Stem may be clear about a Foot in Height above the Surface of the Earth, which will be full enough; and as the Branches are produced commonly very irregular in the Head, you must cut out such of them as cross each other, or thin them where they are too close, whereby the Head of the Plant will be open, and capable of admitting the Air freely into the Middle, which is of great Use to all Kinds of Fruits.

After these Plants have remained in this Nursery one Year, they will be fit to transplant to the Places where they are designed to remain; for it is not so well to let them grow in the Nurseries too large, which will occasion their Roots to be woody, whereby the removing them will not only hazard the Growth of the Plants, but such of them as may take very well, will remain stunted for two or three Years, before they will be able to recover their Check. The Soil in which these Plants thrive to the greatest Advantage, is a rich light sandy Earth, though they will do very well upon middling Soils, not too strong or moist, and in all Situations; but where the Fruit is cultivated, to procure it in the greatest Perfection, they should never be planted in the Shade of other Trees, but must have a free open Exposure. The Distance they ought to be planted is 8 Feet Row from Row, and 6 Feet asunder in the Rows. The best Season for transplanting them is in *October*, when their Leaves begin to decay; observing, as was before directed, to prune their Roots, and trim off all lateral Shoots, or such as cross each other, shortening all long Branches, so as to make the Head regular.

In pruning these Shrubs, most People make Use of Garden Sheers, observing only to cut the Head round, as is practised for Ever-greens, &c. whereby the Branches become so much crowded, that what Fruit is produced, never grows to half the Size it would do, were the Branches thinned, and pruned according to Art; which should always be done with a Pruning Knife, shortening the strong Shoots to about 10 Inches, and cutting out all those which grow irregular, thinning the Fruit-bearing Branches where they are too thick, observing always to cut behind a Leaf Bud. With this Management your Fruit will be near twice as large as those produced upon such Bushes as are not thus pruned, and the Shrubs will continue in Vigour much longer; but you must observe to keep the Ground clear from Weeds, and dig it at least once a Year; and every other Year you should bestow a little rotten Dung upon it, which will greatly improve the Fruit.

It is a common Practice with the Gardeners near *London*, who have great Quantities of these Bushes in order to supply the Markets, to prune them soon after *Michaelmas*, and then to dig up the Ground between the Rows, and plant it with Coleworts for Spring Use, whereby their Ground is employed all the Winter, without prejudicing the Gooseberries; and in hard Winters

these Coleworts often escape, when those which are planted in an open Exposure are all destroyed; and these are generally pulled up for Use in *February* or *March*, so that the Ground is clear before the Gooseberries come out in the Spring; which is a Piece of Husbandry well worth practising where Ground is dear, or where Persons are confined for Room.

GROVES are the greatest Ornaments to a Garden, nor can a Garden be complete which has not one or more of these. In small Gardens there is scarce Room to admit of Groves of any Extent, yet in these there should be at least one contrived, which should be as large as the Ground will allow it; and where these are small, there is more Skill required in the Disposition, to give them the Appearance of being larger than they really are.

These Groves are not only great Ornaments to Gardens, but are also the greatest Relief against the violent Heats of the Sun, affording Shade to walk under, in the hottest Part of the Day, when the other Parts of the Garden are useless; so that every Garden is defective which has not Shade.

Groves are of two Sorts, *viz.* open and close Groves: Open Groves are such as have large shady Trees, which stand at such Distances, that their Branches may approach so near each other, as to prevent the Rays of the Sun from penetrating through them; but as such Trees are a long Time in growing to a proper Size for affording a Shade, so where new Groves are planted, the Trees must be placed closer together, in order to have Shade as soon as possible; but in planting these Groves, it is much the best Way to dispose all the Trees irregularly, which will give them a greater Magnificence, and also form a Shade sooner, than when the Trees are planted in Lines; for when the Sun shines between the Rows of Trees, as it must do some Part of the Day in Summer, the Walks between them will be exposed to the Heat, at such Times, until the Branches of these Trees meet; whereas in the irregular Plantations, the Trees intervene, and obstruct the direct Rays of the Sun.

When a Person who is to lay out a Garden, is so happy as to meet with large full grown Trees upon the Spot, they should remain inviolate, if possible; for it will be better to put up with many Inconveniencies, than to destroy these, which will require an Age to retrieve; so that nothing but that of offending the Habitation, by being so near as to occasion great Damps or obstructing fine Views, should tempt the cutting them down.

Most of the Groves which have been planted either in *England*, or in those celebrated Gardens of *France*, are only a few regular Lines of Trees; many of which are Avenues to the Habitation, or lead to some Building, or other Object; but these do not appear so grand, as those which have been made in Woods, where the Trees have grown accidentally, and at irregular Distances; where the Trees have large spreading Heads, and are left at such Distance, as to permit the Grass to grow under them, then they afford the greatest Pleasure: For nothing is more noble than fine spreading Trees, with large Stems, growing through Grass, especially if the Grass is well kept, and has a good Verdure; besides, most of these planted Groves have generally a Gravel

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Walk, made in a strait Line between them, which greatly offends the Sight of Persons who have true Taste; therefore whenever a Gravel Walk is absolutely necessary to be carried through these Groves, it will be much better to twist it about, according as the Trees naturally stand, than to attempt Regularity; but dry Walks under large Trees are not so useful as in open Places, because the dropping of the Trees will render these Walks useless after Rain, for a considerable Time.

Close Groves have frequently large Trees standing in them, but the Ground is filled under these with Shrubs, or under Wood; so that the Walks which are made in them are private, and screened from Winds, whereby they are rendered agreeable for walking, at such Times when the Air is too violent or cold for walking in the more exposed Parts of the Garden.

These are often contrived so as to bound the open Groves, and frequently to hide the Walls, or other Inclosures of the Garden; and when they are properly laid out, with dry Walks winding through them, and on the Sides of these sweet-smelling Shrubs and Flowers irregularly planted, they have a charming Effect; for here a Person may walk in private, sheltered from the Inclemency of cold or violent Winds, and enjoy the greatest Sweets of the vegetable Kingdom: Therefore where it can be admitted, if they are continued round the whole Inclosure of the Garden, there will be a much greater Extent of Walk; and these Shrubs will appear the best Boundary, where there are not fine Prospects to be gained.

These close Groves are by the French termed Bosquets, from the Italian Word *Boschetto*, which signifies a little Wood; and in most of the French Gardens there are many of them planted; but these are reduced to regular Figures, as Ovals, Triangles, Squares, and Stars; but these have neither the Beauty or Use which those have that are made irregularly, and whose Walks are not shut up on each Side by Hedges, which prevents the Eye from seeing the Quarters; and these want the Fragrance of the Shrubs and Flowers, which are the great Delight of these private Walks; add to this, the keeping the Hedges in good Order is attended with a great Expence, which is a capital Thing to be considered in making Gardens.

GUAIBARA. See *Coccolobis*.

GUAJACANA. See *Diospyros*.

GUAJACUM. *Plum. Nov. Gen. 39. Tab. 17. Lin. Gen. Pl. 465. Lignum Vitæ, or Pockwood.*

The Characters are,

The Flower hath a concave Empalement of 1 Leaf, which is quinquefid. It hath 5 oblong, oval, concave Petals, which are inserted in the Empalement and spread open, and 10 erect Stamina inserted in the Empalement, terminated by small Summits. The Style is long and slender, the Germen oval and pointed, and the Stigma single and slender. The Germen becomes a Berry, which is roundish, with an oblique Point and deeply furrowed, inclosing an oval hard Seed.

The Species are,

1. GUAJACUM *foliolis bijugatis obtusis. Lin. Sp. Pl. 381. Guajacum with obtuse Lobes placed by Pairs. Guajacum flore cæruleo, fructu subrotundo. Plum. Nov.*

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Gen. 391. Guajacum with a blue Flower and a roundish Fruit.

2. GUAJACUM *foliolis multijugatis obtusis. Lin. Sp. Pl. 382. Guajacum with many Pair of obtuse Lobes. Guajacum flore cæruleo fimbriato, fructu tetragono. Plum. Nov. Gen. 391. Guajacum with a blue fringed Flower, and a four-cornered Fruit.*

3. GUAJACUM *foliolis multijugatis acutis. Lin. Sp. Pl. 382. Guajacum with many Pair of acute pointed Leaves. Guilandinoidea. Hort. Cliff. 489. Afra arbor acacia similis, foliis myrti aculeatis splendentibus. Boerb. Ind. alt. 2. p. 57. African Tree like the Acacia, with shining acute pointed Myrtle Leaves.*

The 1st Sort is the common *Lignum Vitæ*, or *Guajacum*, used in Medicine; it grows naturally, in most of the Islands in the *West-Indies*, where it rises to a very large Tree, having a hard, brittle, brownish Bark, not very thick; the Wood is firm, solid, and ponderous, appearing very resinous, of a blackish yellow Colour in the Middle, and of a hot aromack Taste; the smaller Branches have an Ash-coloured Bark, and are garnished with Leaves, divided by Pairs, each Pair having 2 Pair of small oval blunt Leaves (or Pinnæ) of a stiff Consistence, and a lucid green; the Flowers are produced in Clusters at the End of the Branches, they are composed of 5 oval concave Petals, of a fine blue Colour; in the Center of these is fixed a Style with an oval Germen, crowned by a slender Stigma; and round this is situated a great Number of Stamina, as long as the Style, terminated by Sickle-shaped Summits. Dr. *Linnaeus* supposes the Flowers to have but 10 Stamina, whereas they certainly have 20, so it should be ranged in his twelfth Class of Plants; nor is it the Empalement, but the Germen which becomes the Fruit.

The Bark and Wood of this Tree are much of the same Nature, only the Wood is accounted hotter; they are used in Diet Drinks to purify and cleanse the Blood, and to cause sweating; they are esteemed good for the Gout and Dropsy, the King's Evil, and particularly for the French Pox. The Gum or Resin which is black, shining, and brittle, and, when powdered, of a greenish white Colour, of an aromack Smell, and poignant Taste, is somewhat cathartick, and a good Purge in rheumatick Cases, to the Quantity of two Scruples mixed with the Yolk of an Egg, and given in a convenient Vehicle.

The Wood of this Tree is so hard as to break the Tools in felling them, so they are seldom cut down for Fire Wood, being difficult to burn; but the Wood is of great Use to the Sugar Planters, for making Wheels and Cogs for the Sugar Mills, &c. It is also frequently brought to Europe, and wrought into Bowls, and other Utensils are made of the Wood.

This Tree can only be propagated by Seeds, which must be procured from the Countries where it naturally grows; these must be fresh; otherwise they will not grow; when they arrive, they should be sown in Pots filled with light Earth, and plunged into a good Bed: If the Seeds are good, and the Bed in which they are plunged is of a proper Temperature of Heat, the Plants will appear in 5 or 6 Weeks after, and in a Month or 6 Weeks will grow to be of Strength enough for transplanting,

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planting; then they should be carefully taken out of the Seed Pots, so as to preserve their Roots as entire as possible, and each planted in a separate small Pot filled with light Earth, and plunged into a new hot Bed of Tanners Bark, where they must be shaded from the Sun till they have taken fresh Root; then they must be treated as other tender exotick Plants from warm Countries, admitting a large Share of free Air to them when the Weather is warm: They will require to be frequently refreshed with Water in warm Weather, but it must be given them with Caution, for too much Wet will infallibly destroy them. While the Plants are young, they may be kept during the Summer Season in a hot Bed of Tanners Bark under a Frame; but in the Autumn they must be removed into the Bark Stove, and plunged into the hot Bed of Tan, where they should constantly remain, and must be treated as other tender Plants, being careful not to give them too much Water in the Winter, when it is very prejudicial to them, and in Summer they should have a large Share of free Air admitted to them every Day. With this Treatment the Plants will thrive very well, but they are of slow Growth in their own Country, so cannot be expected to make great Progress in Europe.

The 2d Sort hath many small Leaves placed along the Mid-rib by Pairs, which are rounded and obtuse at their Ends, but narrow at their Base: They are of the same Consistence with those of the former Sort, but of a darker green Colour; the Flowers are produced in loose Bunches toward the End of the Branches, which are of a fine blue Colour, and their Petals are fringed on their Edges. This is called in some of the Islands *Bastard Lignum Vitæ*; I received it from *Antigua* by that Title. It requires the same Treatment as the first Sort, and is propagated by Seeds the same Way.

I have also received Specimens from the Island of *Barbuda* of one, which seems different from either of those before-mentioned: The Branches have the same Appearance with those of the first Sort, but the Leaves are larger and indented at their Extremities, and are placed all round the Branches, on very short Foot Stalks; the Flowers were broken off, so I cannot determine the Difference between them, but by all Appearance they seem to be of the same Genus.

The 3d Sort has been long an Inhabitant in some of the curious Gardens in *England* and *Holland*, but seldom produces flowers in *Europe*. This grows naturally at the *Cape of Good Hope*, from whence the Seeds were brought first to *Holland*, where it passed for a Species of *Acacia*, until it produced its Flowers; which, by the Account given of them by the late Dr. *Boerhaave*, were of the Butterfly Kind; but whether Dr. *Linnaeus* has seen the Flowers or not, I cannot say; however, he has removed it from that Class of Plants, and has added it to this Genus; and as I have not yet seen the Flowers, so I do not know if it is right placed. The Plants retain their Leaves all the Year, and will live in a good Green-house in Winter, but in Summer must be placed abroad with other Green-house Plants. It is of slow Growth, and is with Difficulty propagated by Layers.

GUAJAVA. See *Psidium*.

GUANABANUS. See *Annona*.

GUAZUMA. See *Theobroma*.

GUIDONIA. See *Samyda*.

GUILANDINA. *Lin. Gen. Pl. 464. Bonduc. Plum. Nov. Gen. 25. Tab. 39. The Nickar Tree.*

The Characters are,

The Empalement of the Flower is of 1 Leaf, is Bell-shaped, and cut at the Rim into 5 equal Parts; the Flower has 5 concave Spear-shaped Petals which are equal, and sit close to the Empalement, into which they are inserted. It hath 10 Awl-shaped Stamina which are erect, and inserted in the Empalement, being alternately shorter than each other, and terminated by obtuse Summits. In the Center is situated an oblong Germen, supporting a slender Style the Length of the Stamina, crowned by a single Stigma. The Germen becomes a rhomboid Pod, with a convex Suture on the upper Side; it is swelling and compressed, having one Cell, including oval hard Seeds separated by Partitions.

The Species are,

1. *GUILANDINA aculeata, foliis bipinnatis, foliolis ovatis oppositis integerrimis.* Prickly *Guilandina* with double winged Leaves, whose Lobes are oval, opposite, and entire. *Bonduc vulgare majus polyphyllum. Plum. Nov. Gen. 25.* Common greater *Bonduc*, having many Leaves called yellow Nickar.

2. *GUILANDINA aculeata, foliolis ovalibus oppositis sessilibus.* Prickly *Guilandina* with oval small Leaves placed opposite, and sitting close. *Bonduc vulgare minus polyphyllum. Plum. Nov. Gen. 25.* Smaller common *Bonduc*, or Nickar Tree having many Leaves, called grey Nickar.

3. *GUILANDINA inermis foliis bipinnatis, foliolis ovatis acutis alternis.* Smooth *Guilandina* with double winged Leaves, whose small Leaves are oval, pointed, and alternate.

4. *GUILANDINA inermis, foliis subpinnatis, foliolis inferioribus ternatis. Flor. Zeyl. 155.* Smooth *Guilandina* with winged Leaves, whose under small Leaves are trifoliate. *Moringba Zeylanica, foliorum pinnis pinnatis, flore majore, fructu anguloso. Burm. Zeyl. 162. Tab. 75.* *Morunga* of *Ceylon*, with double winged Leaves, a larger Flower, and an angular Fruit.

5. *GUILANDINA inermis foliis bipinnatis, foliolis ovato-lanceolatis alternis.* *Guilandina* with smooth Branches, doubly winged Leaves, and the small Leaves oval, Spear-shaped, and placed alternate. *Bonduc Canadense polyphyllum, non spinosum, mas & fœmina. Du Hamel.* *Canada Nickar Tree* having many Leaves, which have no Spines, and are male and female.

The 1st and 2d Sorts grow naturally in most of the Islands in the *West-Indies*, where they twine their Stalks about any neighbouring Support. and rise to the Height of 12 or 14 Feet. The Leaves of the first Sort are near a Foot and a Half long, and composed of 6 or 7 Pair of Pinnæ, or Wings, each of which has as many Pair of Lobes, or small Leaves set along the Mid-rib; these are oval and entire; the Foot Stalk or principal Mid-rib of the Leaf, is armed with short crooked Thorns placed irregularly; the Stalks are also closely armed with the like Thorns, which are larger. The Stalks at first grow erect, but afterward twine about the neighbouring Trees or Shrubs, being too weak to stand without Support: The Flowers come out in long Spikes from the Wings of the Stalk; they are composed of 5 concave yellow Petals, which are equal; in the Center is

situated the oblong Germen, surrounded by 10 Stamina. After the Flower is past, the Germen becomes a broad thick Pod, about 3 Inches long and 2 broad, clofely armed with slender Spines, opening with 2 Valves, each inclofing two hard Seeds about the Size of Children's Marbles, of a yellowish Colour.

The 2d Sort differs from the first, in having much smaller Leaves, which are set clofer together; and below each Pair of Lobes are situated two short stiff crooked Spines, placed opposite; the Flowers are of a deeper yellow Colour than those of the first Sort, and the Seeds are of an Ash Colour.

The 3d Sort was discovered by the late Dr. Houstoun at *Campeachy*, from whence he sent the dried Samples to *England*, but there was no Fruit on the Trees at the Time when he was there, but he mentions that this Sort had an upright Stem, of a large Size, dividing into many Branches; these are garnished with double winged Leaves, which are smooth; the Wings come out opposite, each Leaf being composed of four Pair, but the Lobes are placed alternate on the middle Rib; they are oval, but end in a Point, and are of a light green Colour.

The 4th Sort grows naturally in the Island of *Ceylon*, and in several Places on the *Malabar Coast*, from whence the Seeds were brought to *England*. This in its native Country, rises to the Height of 25 or 30 Feet, with a strong Stem, covered with a smooth Bark, which in the young Branches is green, but on the older is of an Ash Colour; the Root grows knobbed, and very thick. This, when young, is scraped and used by the Inhabitants as Horse Raddish is in *Europe*, having much the same sharp Taste; the Branches are garnished with decompound winged Leaves; those which are situated at the Base, have but 3 Leaves, but above the Leaves are branched out into several Divisions, which are again divided into smaller, which have 5 or 6 Pair of oval Lobes, terminated by an odd one; they are of a light green, and a little hoary on their under Side. The Flowers are produced in loose Bunches from the Side of the Branches; they are composed of an unequal Number of Petals, from 5 to 10; they have 10 short Stamina surrounding the Germen, which afterward turns to a long taper Pod, including several angular Seeds, covered with a thin Membrane. These have a Flavour like the Root.

These 4 Sorts are Natives of warm Countries, so will not live through the Winter in *England*, unless placed in a warm Stove, and the Pots plunged into the Tan Bed. They are propagated by Seeds, but those of the two first Sorts are so hard, that unless they are soaked 2 or 3 Days in Water before they are put into the Ground, or placed under the Pots in the Tan Bed to soften their Covers, they will remain Years in the Ground without vegetating; when the Plants come up, they will be fit to transplant in a short Time; then they should be each transplanted into a small Pot filled with light fresh Earth, and plunged into a moderate hot Bed of Tanners Bark, shading them till they have taken fresh Root; then they must be treated as other tender exotick Plants, giving them a large Share of Air in warm Weather, and but little Water; and when the Plants have advanced to be too tall to remain in the Frames, they must be removed into the Bark Stove and plunged into the hot Bed, where they will make great Progress, provided they have not

too much Water, especially during the Winter Season, for these Plants are very impatient of Moisture in cold Weather.

The 4th Sort requires the same Treatment as those before-mentioned, but the Seeds will grow without being steeped in Water; and the Plants are with Difficulty shifted from one Pot to another, for their Roots are large, fleshy, and have but few Fibres; so that unless great Care is taken, all the Earth will fall away from them, which often causes their Stalks to decay almost to the Root, and sometimes occasions the Loss of the Plants. This Plant must be sparingly watered at all Times, but particularly in cold Weather, when Moisture will cause them to rot in a short Time.

The 5th Sort grows naturally in *Canada*, from whence the Plants were brought to *Paris*, where it has been some Years cultivated; but within 8 Years past, it was first brought to *England*. This, in the Country where it naturally grows, rises with an erect Stem to the Height of 30 Feet or more, dividing into many Branches, covered with a bluish Ash-coloured Bark very smooth, and garnished with large decompound winged Leaves of the oval Shape, very smooth and entire, but ranged alternate on the Mid-rib; these fall off in the Autumn, and new ones come out late in the Spring.

There are male and female of this Sort in different Plants; as these have not as yet flowered in any of the *English Gardens*, so I can give no farther Account of it, nor of the Fruit, having never seen any of them. This Sort lives abroad in the open Air, and is never hurt by Frost. It is only propagated by cutting off some of the Roots, which cause them to shoot upward, so may be taken from the old Root, and multiplied. It requires a light Soil, not too moist.

GUNDELIA. *Tourn. Cor. 51. Tab. 486. Lin. Gen. Pl. 828. Hacub. Vaill. Ac. Reg. Scien. 1718.*

The Characters are,

It hath an uniform tubulous Flower, composed of many hermaphrodite Florets, incircled by Leaves. They have but 1 Petal which is closed at the Bottom, but swells at the Top, where it is slightly cut into 5 Parts: They have 5 short hairy Stamina, terminated by long cylindrical Summits. The oval Germen is situated at the Bottom of the Flower, crowned by small Scales, supporting a slender Style longer than the Petal, terminated by 2 revolving Stigmas. The Germen becomes a roundish single Seed inclosed in the common Receptacle, which is conical, and the Seeds are separated by a chaffy Down.

We have but one Species of this Genus at present in *England*, viz.

GUNDELIA. *Lin. Sp. Pl. 814.* There is no *English* Title to this Plant, but there are two Varieties of it mentioned by *Tournefort*, which are supposed to arise from the same Seeds, as they were found growing promiscuously together. These are,

1. *GUNDELIA Orientalis, acanthi aculeati foliis, floribus intense purpureis, capite araneosâ lanugine obsito.* *Tourn. Cor. 51.* Eastern *Gundelia* with prickly Bearbreech Leaves, deep purple Flowers, and a Head covered with a Down like a Cobweb.

2. *GUNDELIA Orientalis, acanthi aculeati folio, capite glabro.* *Tourn. Cor. 51.* Eastern *Gundelia*, with a prickly Bearbreech Leaf, and a smooth Head.

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This Plant was discovered by Dr. Gundelsheimer, in Company with Tournesort, near Baibout in Armenia, but has since been found growing naturally in several Places in the *Levant*, where it is generally found in dry strong Land. The Stalks of this Plant seldom rise more than a Foot high, the under Leaves are long, narrow, and sawed on their Edges, their Teeth ending in a Spine; the other Leaves are broader, irregularly flatted to the Mid-rib; and armed at the Points with sharp Prickles; the Stalks divide upward into several Branches, armed with Leaves of the same Form, but narrower; and each is terminated by a conical Head of Flowers, resembling those of Fuller's Thistle, being surrounded at the Base by a Circle of long narrow prickly Leaves: These Heads are composed of many hermaphrodite Florets, shut up in the Scales, each having a Germen with 5 Stamina surrounding it; but there are few of the Seeds which ripen perfectly in each Head in the natural Places of its Growth, and in *England* they have not as yet produced any good Seeds; for if Rain happens at the Time when the Plants are in flower, the Germen perishes, which is the Case with several other of those Plants whose Flowers are collected into Heads.

These Plants are propagated by Seed, which should be sown the Beginning of *March*, in a warm dry Border of fresh, but lean Earth, in the Place where the Plants are designed to remain. When the Plants come up, they must be carefully cleared from Weeds; as they grow large, they should be thinned, leaving the Plants which are designed to remain, about 2 Feet asunder, that they may have Room to spread. After this there is no other Culture required, but to keep them clear from Weeds; and if the Frost should prove severe in Winter, the Plants must be covered with Straw or Peas Haulm to protect them, but this Covering must be taken off in mild Weather; in 2 Years they will produce their Flowers, when they will make a fine Appearance amongst other hardy Plants in the Pleasure Garden. They flower in *July*, and the Plants generally decay the following Autumn, so that fresh Seeds must be annually procured from Abroad.

GYPSOPHYLA. *Lin. Gen. Pl.* 498. We have no English Title for this Genus.

The Characters are,

The Flower hath a permanent, angular, Bell-shaped Empalement, cut into 5 Parts at the Top. It hath 5 oval blunt Petals, which spread open, and 10 Awl-shaped Stamina, terminated by roundish Summits. In the Center is situated a globular Germen, supporting 2 slender Styles, crowned by single Stigmas. The Germen afterward becomes a globular Capsule with one Cell, opening with 5 Valves, filled with small roundish Seeds.

The Species are,

1. **GYPSOPHYLA** *foliis mucronatis recurvatis, floribus aggregatis.* *Lin. Sp. Pl.* 406. *Gypsophyla* with pointed recurved Leaves, and Flowers gathered in a Head. *Lycnris Hispanica* *kali folio, multiflora.* *Tourn. Inst. R. H.* 338. Spanish *Lycnris* with a Glasswort Leaf and many Flowers.

2. **GYPSOPHYLA** *foliis lanceolato-linearibus, obsolete triquetris levibus obtusis secundis.* *Lin. Sp. Pl.* 407. *Gypsophyla* with narrow Spear-shaped Leaves, having 3 blunt Angles, and smooth obtuse Leaves in Clusters. *Sapo-*

naria caule simplici, foliis linearibus ex alis foliorum confertis teretibus. *Hort. Cliff.* 166. Sopewort with a single Stalk, very narrow Leaves, coming out in Clusters from the Wings of the Stalks.

3. **GYPSOPHYLA** *foliis lanceolatis levibus, caulibus diffusis, pistillis corollâ campanulatâ longioribus.* *Lin. Sp. Pl. App.* 1195. *Gypsophyla* with smooth Spear-shaped Leaves, diffused Stalks, and the Pointal longer than the Petal, which is Bell-shaped.

4. **GYPSOPHYLA** *foliis ovato-lanceolatis, semiamplexicaulibus.* *Lin. Sp. Pl.* 408. *Gypsophyla* with oval Spear-shaped Leaves, half embracing the Stalks. *Lycnris Orientalis, saponaria folio & facie, flore parvo & multiplici.* *Tourn. Cor.* 24. Eastern *Lycnris* with the Leaf and Appearance of Sopewort, having many small Flowers.

5. **GYPSOPHYLA** *foliis lanceolatis scabris, corollis revolutis.* *Lin. Sp. Pl.* 407. *Gypsophyla* with rough Spear-shaped Leaves, and the Petals of the Flowers recurved. *Alfina frutescens Caryophylli folio, flore parvo albo.* *Gerb.* Shrubby Chickweed, with a Clove Gilliflower Leaf, and a small white Flower.

The 1st Sort grows naturally in the South of *France* in *Spain*, and *Italy*, upon the Mountains. This hath a perennial Root, from which arise many narrow Leaves ending in acute Points, which are recurved; the Stalks rise about a Foot high, garnished with narrower Leaves placed opposite, and at some of the Joints there are smaller Leaves growing from the Stalks in Clusters; the upper Part of the Stalk divides into smaller Branches, each being terminated by a close Bunch of small white Flowers. These appear in *July*, and are succeeded by small oval Capsules, filled with small Seeds.

The 2d Sort is somewhat like the first, but the Leaves are much narrower, and almost 3 cornered; they are placed in Clusters, which come out from the Side of the Stalk; the Bunches of Flowers are smaller, and not so closely joined. This hath a perennial Root, and grows naturally upon the *Helvetic* Mountains.

The 3d Sort hath a perennial Root, from which arise smooth Spear-shaped Leaves in Clusters; the Stalks are near a Foot long, but are prostrate near the Ground; the Flowers have a purplish Cast, and the Stamina are much longer than the Petals of the Flowers. This flowers in *June* and *July*, and the Seeds ripen in Autumn.

The 4th Sort grows naturally in the *Levant*, and also in *Spain*. It hath a strong, fleshy, fibrous Root, which strikes deep in the Ground, sending up several thick, fleshy Stalks, which rise near 2 Feet high, and are garnished with oval Spear-shaped Leaves, which half embrace the Stalks with their Base; the upper Part of the Stalk divides into many smaller Branches, terminated with loose Bunches of small white Flowers. These open in *July*, and the Seeds ripen in the Autumn.

The 5th Sort grows naturally in *Siberia* and *Tartary*, the Seeds of it were sent me from *Petersburgh*. This hath a perennial Root, from which arise many branching Stalks a Foot and a Half high, garnished with narrow, smooth pointed Leaves, shaped like those of Gilliflower; at the Top of the Stalks are produced loose Clusters of very small white Flowers, which appear at the same Time with the former Sorts, and the Seeds ripen in the Autumn.

These

These Plants have no great Beauty, so are rarely cultivated but in Botanick Gardens, for Variety.

They are propagated by Seeds, which should be sown in a Bed of light Earth, and when the Plants are fit to remove, they may be transplanted into the Places where

they are designed to remain, and will require no other Culture but to keep them clean from Weeds; for the Roots will continue several Years, and annually produce Flowers and Seeds.

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HÆMANTHUS. Tourn. Inst. R. H. 657. Tab. 453. Lin. Gen. Pl. 394. *Dracunculoides*. Boerb. Ind. 2. 226. Blood-flower.

The Characters are,

The Flower has a permanent Empalement of 6 Leaves, which is large and shaped like an Umbel. It hath 1 erect Petal, cut into 6 Parts, having a short angular Tube, and 6 Awl-shaped Stamina, inserted in the Petal, but longer, and terminated by oblong prostrate Summits. The Germen is situated under the Flower, supporting a single Style the Length of the Stamina, crowned by a single Stigma. The Germen becomes a roundish Berry with 3 Cells, each containing 1 triangular Seed.

The Species are,

1. *HÆMANTHUS foliis linguiformibus planis*. Prod. Leyd. 42. Blood-flower with plain Tongue-shaped Leaves. *Hæmantbus Africanus*. H. L. Bat. African Blood-flower, or Cape Tulip.

2. *HÆMANTHUS foliis longioribus carinatis*. Blood-flower with longer Keel-shaped Leaves.

3. *HÆMANTHUS foliis lanceolatis undulatis*. Hort. Cliff. 127. Blood-flower with Spear-shaped waved Leaves. *Hæmantbus colchici foliis perianthio herbaceo*. Hort. Elsb. 167. Blood-flower with Meadow-Saffron Leaves, and an herbaceous Involucrum; and the *Dracunculoides*. Boerb. Ind. alt. 2. 226. Bastard Dragon.

The 1st Sort has been many Years in several curious Gardens in Europe, where it seldom flowers. This hath a large bulbous Root, from which in the Autumn come out two broad flat Leaves of a fleshy Consistence, shaped like a Tongue, which turn backward on each Side, and spread flat on the Ground, so have a singular Appearance all the Winter; and in the Spring these Leaves decay; so that from May to the Beginning of August, they are destitute of Leaves: When these produce their Flowers, it is always in the Autumn, just before the new Leaves come out. In the Books where this Plant is figured, the Flowers are represented growing upon a strong upright Foot Stalk, but all those which I have seen in flower, never have risen more than two Inches from the Bulb, with a large Cluster of bright red Flowers, inclosed in a common leafy Empalement; these were tubulous, with one Petal cut into 6 Parts, each having 6 long Stamina, standing out beyond the Petal, and in the Center appears the Germen sitting under the Flower, supporting a single Style, crowned with a Stigma. The Germen never ripens to a Seed in England, but decays with the Flower, and then the green Leaves grow and spread on the Ground.

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The 2d Sort hath a large bulbous Root like the first, which sends out 3 or 4 Leaves, that grow a Foot long or more; these are not flat like those of the other, but are hollowed like the Keel of a Boat, and stand more erect than those of the former Sort, but are not quite so broad; the Flowers of this are like those of the first, but are of a paler red; this is certainly different from the other. I received the Roots of this from Dr. Van Royen, Professor of Botany at Leyden.

The 3d Sort hath Roots composed of many thick fleshy Tubers which join at the Top, where they form a Head, out of which arises a fleshy spotted Stalk, like that of the Dragon, which spreads out at the Top into several Spear-shaped Leaves, waved on their Edges. The Stalks grow about a Foot high, and the Leaves are 6 or 8 Inches long, and 2 broad in the Middle; from the Side of this Stalk near the Ground, breaks out a strong fleshy Foot Stalk, about 6 or 8 Inches long, sustaining at the Top a large Cluster of Flowers, included in one common Empalement or Covering, which is permanent; the Flowers are shaped like those of the other Sorts, but are of a yellowish red Colour. These appear in May, June, or July, and are succeeded by Berries of a beautiful red Colour when ripe.

The two first Sorts are with Difficulty propagated in Europe, for their Roots seldom put out any Offsets, but the Gardens in Holland are supplied with them from the Cape of Good Hope, where they naturally grow, and produce Seeds; they are too tender to thrive in this Country without artificial Heat in Winter, therefore the Roots must be planted in Pots filled with light loamy Earth, and, in the Winter, placed in a moderate Degree of Warmth, where, during that Season, the Leaves will be in full Vigour, so will make a pretty Appearance when intermixed with other Plants in the Stove, and though they but seldom flower here, yet are they worthy of a Place in every Garden where there is Convenience of keeping them. The Roots may be taken up when their Leaves are decayed, and kept out of the Ground till August, when they should be new potted, and may remain abroad till the End of that Month, at which Time they should be removed into the Stove, and during the Time they are growing, will require to have frequent Waterings, but it must not be given to them in large Quantities.

The 3d Sort is also a Native of the Cape of Good Hope, from whence it was first brought to Holland, where it has been propagated, and dispersed over Europe;

rope; this may be propagated by parting the Roots; the best Time for this is the Spring, before the Plants put out new Stalks, which is also a right Time to shift and new pot them; but as the Roots do not multiply very fast in Offsets, the best Way is to propagate them from Seeds, which they ripen plentifully in England; these should be sown soon after they are ripe, in Pots filled with light Earth, and kept in the Stove all the Winter; if these Pots are plunged into the Tan Bed in the Bark Stove, in the Vacancies between the Plants, the Earth will be kept warm, and will not dry so fast, as when they are placed in a dry Stove, so the Seeds will be sooner prepared to vegetate; in the Spring the Pots may be taken out of the Stove, and plunged into a hot Bed, which will bring up the Plants; these must have Air admitted to them every Day in mild Weather, to prevent their drawing up weak; and when they are fit to remove, they may be each planted in a separate small Pot filled with light Earth, and plunged into the hot Bed again, to promote their taking new Root; then they must be gradually hardened, and afterward may be removed into the dry Stove, where they should constantly remain, otherwise the Plants will not thrive and flower in this Country. In the Winter Season they must not have too much Wet, for as their Roots are fleshy and succulent, so they are apt to rot with Moisture. In the Summer they must have a large Share of Air in warm Weather, and require to be frequently watered, especially during the Time of their flowering.

HÆMATOXYLUM. *Lin. Gen. Pl. 417.* Bloodwood, Logwood, or Campeachy Wood.

The Characters are,

The Flower hath a permanent Emplacement, cut into 5 oval Segments. It hath 5 oval Petals, which are equal, and larger than the Emplacement, and 10 Awl-shaped Stamina, longer than the Petals, terminated by small Summits. In the Center is situated an oblong oval Germen, supporting a single Style, crowned by a thick indented Stigma. The Germen becomes a compressed obtuse Capsule, with one Cell, opening with two Valves, containing 2 or 3 oblong Kidney-shaped Seeds.

We have but one Species of this Genus, viz.

HÆMATOXYLUM. *Hort. Cliff. 160.* Logwood. *Lignum Campechianum, species quædam. Sloan. Cat. Jam. 213.* Campeachy Wood.

This Tree grows naturally in the Bay of Campeachy, at Honduras, and other Parts of the Spanish West-Indies, where it rises from 16 to 24 Feet high. The Stems are generally crooked, and very deformed, and seldom thicker than a Man's Thigh. The Branches come out on every Side; they are crooked, irregular, and armed with strong Thorns, and garnished with winged Leaves, composed of 3 or 4 Pair of Lobes, which are obtuse, and indented at the Top. The Flowers come in a Racemus from the Wings of the Leaves, standing erect; they are of a pale yellowish Colour, with a purple Emplacement, and are succeeded by flat oblong Pods, each containing two or three Kidney-shaped Seeds.

The Wood of this Tree is brought to Europe, where it is used for dyeing Purples, and for the finest Blacks, so is a valuable Commodity; but the Spaniards, who claim a Right to the Possession of those Places where

it naturally grows, are for excluding all other Countries from cutting it, which has occasioned many Disputes with their Neighbours, but particularly with the English; this is to be hoped will soon be over, as there are some of the Planters in Jamaica, and the other Islands in America, belonging to the Crown of Great-Britain, who have propagated this Tree in so great Plenty, as to have Hopes of supplying the Demand for this Wood in Britain in a very few Years; for the Trees grow so fast there, as to be fit for Use in 10 or 12 Years from Seed; and as they produce great Plenty of Seeds in the British Colonies, so those Seeds scattering about, the Plants come up in all the neighbouring Lands, therefore will soon be like an indigenous Plant of the Country.

Some of the Planters in Jamaica have inclosed their Estates with Hedges formed of these Trees, which are very strong and durable, but where the Hedges are cut, it will greatly retard the Growth of the Trees, so that those who propose to make an Advantage by the Propagation of the Wood, should sow the Seeds upon swampy Lands, which may be unfit for growing Sugar, and permit all their Branches to remain, which will be of great Use in augmenting the Bulk of their Stems; and if, while the Plants are young, they are kept clean from Weeds, &c. it will be of great Advantage in promoting their Growth. I have been credibly informed by some of the Planters in Jamaica, that they have had some Plants of this Sort upward of 10 Feet high in 3 Years, so that it requires but few Years to raise a Supply of this Wood, sufficient to answer all the Demands for it.

This Plant is preserved in some curious Gardens in England, for Variety. The Seeds are frequently brought from America, which, if fresh, readily grow when sown upon a good hot Bed; and if the Plants are kept in a moderate hot Bed, they will grow upwards of a Foot high the same Year, and, while the Plants are young, they are generally well furnished with Leaves, but afterward they make but little Progress, and are frequently but thinly clothed with Leaves. These Plants are very tender, so should be constantly kept in the Bark Stove, where, if they are duly watered, and the Stove kept in a good Degree of Heat, the Plants may be preserved very well. There are some of these Plants now in England, upward of 6 Feet high, and as thriving as those in their native Soil.

HALYCACABUM. See *Phytalis*.

HALICACABUS PEREGRINA. See *Cardiospermum*.

HALIMUS. See *Atriplex*.

HALLERIA. *Lin. Gen. Pl. 679.* *Caprifolium. Boerb. Ind. Alt. 2. p. 226.* African Fly Honeyfuckle.

The Characters are,

The Flower hath a permanent Emplacement of 1 Leaf, cut into 3 Parts at the Top, the upper Segment being much broader than the other. It hath 1 Petal of the grinning Kind. The Bottom of the Tube is roundish. The Chaps are swollen and inflexed, the Brim is erect and oblique, cut into 4 Segments, the upper being longer than the others, and is blunt, with an Indenture at the Top, the 2 Side ones are shorter, and pointed, the lower is very short and acute. It hath 4 Stamina, which are bristly, 2 being longer.

longer than the other, terminated by twin Summits. In the Bottom of the Tube is situated an oval Germen, with a Style longer than the Stamina, crowned by a single Stigma. The Germen becomes a roundish Berry with two Cells, each containing one hard Seed.

We have but one Species of this Genus, viz.

HALLERIA. Hort. Cliff. 323. This Plant has its Title from Dr. Haller, who was Professor of Botany at Gottengen, in Germany. This is the *Caprifolium Africanum folio pruni leviter serrato, flore ruberrimo, baccâ nigra*. Boerb. Ind. alt. 2. 226. African Fly Honeyfuckle with a Plum Leaf lightly sawed, a very red Flower, and a black Berry.

The English Name which I have here added, has been given to this Plant by some Gardeners, who observed that the Shape of the Flower had some Resemblance to that of the Upright, or Fly Honeyfuckle, and for want of an English Name, gave this to it, or they might take it from the Latin Name, by which it was called by Dr. Boerhaave, who made it a Species of Honeyfuckle.

This Plant grows 6 or 8 Feet High, having a woody Stem, well furnished with Branches; these have oval sawed Leaves, placed opposite by Pairs, and continue green through the Year; the Flowers come out singly, and are of a red Colour, but, being intermixed with the Leaves, are not seen unless they are looked after, for they grow scatteringly on the Branches; these come out in June, and the Seeds ripen in September, the Leaves are green in Winter, so the Plants make a Variety in the Green-house during that Season.

It may be propagated by Cuttings, which, if planted in Pots filled with light Earth in the Spring, and plunged into a gentle hot Bed, will soon take Root; these Plants may be exposed in Summer, and will require Plenty of Water in that Season; in Winter they must be housed with Myrtles, and other hardy exotick Plants, which require a large Share of Air in mild Weather.

HAMAMELIS. Lin. Gen. Pl. 155. *Trilopus*. Mitch. Gen. 22. The Witch Hazel.

The Characters are,

It is male and female in different Plants; the male Flowers have a four-leaved Empalement, and 4 narrow Petals, reflexed; they have 4 narrow Stamina, shorter than the Petals, terminated by bearded reflexed Summits. The female Flowers have a four-leaved Involucrum, in which are 4 Flowers; these have a four-leaved Empalement, coloured; they have 4 narrow Petals, reflexed, and 4 Nectaria adhering to the Petals. In the Center is situated an oval hairy Germen, supporting 2 Styles, crowned by beaded Stigmas. The Germen becomes an oval Capsule, sitting in the Involucrum, having 2 Cells, each containing 1 hard oblong smooth Seed.

We have but one Species of this Genus in the English Gardens at present, viz.

HAMAMELIS. Flor. Virg. 139. The Witch Hazel. *Pistachia Virginiana nigra, coryli foliis*. Pluk. Alm. 296. Black Virginia Pistachia with Hazel Leaves.

This Plant grows naturally in North America, from whence the Seeds have been brought to Europe, and many of the Plants have been raised in the English Gardens, where they are propagated for Sale by the Nursery Gardeners. It hath a woody Stem, from 2 to 3

Feet high, sending out many slender Branches, garnished with oval Leaves, indented on their Edges, having great Resemblance to those of the Hazel, placed alternately on the Branches; these fall away in Autumn, and when the Plants are destitute of Leaves, the Flowers come out in Clusters from the Joints of the Branches; these sometimes appear the latter End of October, and often not till December, but are not succeeded by Seeds in this Country.

As the Flowers of this Shrub make very little Appearance, it is only preserved in the Gardens of the Curious, for Variety.

This is propagated by laying down the young Branches in Autumn, which will take Root in one Year, provided they are duly watered in dry Weather; but many of the Plants which are in the Gardens, have been produced from Seeds which came from America; these Seeds always remain a whole Year in the Ground, so they should be sown in Pots which may be plunged into the Ground in a shady Part of the Garden, where they may remain all the Summer, and require no other Care but keep the Pots clean from Weeds, and in very dry Weather to water them now and then; in Autumn the Pots may be removed to a warmer Situation, and plunged into the Ground under a warm Hedge, and if the Winter should prove very severe, they should have some light Covering thrown over the Pots, which will secure the Seeds from being destroyed. In the Spring the Plants will come up, therefore as the Season grows warm, the Pots may be removed where they may have the Morning Sun till Eleven o'Clock, and if they are duly watered in dry Weather, the Plants will have made good Progress by Autumn, when they should be transplanted, either into small Pots, or in a Nursery Bed, where in one, or at most two Years Time, they will be strong enough to plant where they are designed to remain; they love a moist Soil, and a shady Situation.

HARMALA. See Peganum.

HAWTHORN. See Mespilus.

HAZEL. See Corylus.

HEDERA. Lin. Gen. Plant. Tourn. Inst. R. H. 612. Tab. 384. The Ivy Tree.

The Characters are,

The Flowers are disposed in Form of an Umbel, having a small Involucrum indented in many Parts. The Empalement is cut into 5 Parts, and sits upon the Germen. The Flower hath 5 oblong Petals, which spread open, whose Points are incurved; they have 5 Awl-shaped Stamina, terminated by prostrate Summits, which are cut into 2 at their Base. The Germen, which is situated below the Flower, supports a short Style, crowned by a single Stigma. The Germen becomes a globular Berry, with one Cell, inclosing 4 or 5 large Seeds, convex on one Side, and angular on the other.

The Species are,

1. **HEDERA foliis ovatis lobatisque.** Flor. Lapp. 91. Ivy with oval and lobed Leaves. *Hedera arborea*. C. B. P. 305. Tree Ivy, and the *Hedera communis major*. J. B. 2. 111. Great common Ivy.

2. **HEDERA foliis quinatis, ovatis, serratis.** Hort. Cliff. 74. Ivy with Leaves composed of 5 Lobes, which are sawed. *Vitis quinquefolia Canadensis scandens*. Tourn. Inst.

Inst. 613. Climbing Canada Vine with 5 Leaves, commonly called *Virginia Creeper*.

The 1st Sort grows naturally in most Parts of *England*, where it meets with any neighbouring Support. The Stalks will fasten to it, and rise to a very great Height, sending out Roots on every Side, which get into the Joints of Walls, or the Bark of Trees, and thereby are supported; or if there is no Support near, the Stalks trail upon the Ground, and take Root all their Length, so that they closely cover the Surface, and are difficult to eradicate, for where any small Parts of the Stalks are left, they will soon spread and multiply. While these are fixed to any Support, or trail upon the Ground, their Stalks are slender and flexible, but when they have reached to the Top of their Support, they shorten and become woody, forming themselves into large bushy Heads, and their Leaves are larger, more of an oval Shape, and not divided into Lobes like the lower Leaves, so that it hath a different Appearance, which has occasioned some to take them for distinct Species.

In the latter Part of the last Century, when it was the Fashion to fill Gardens with all Sorts of sheered Evergreens, there were many of these Plants trained into round Heads, which were clipped into Balls, or in Form of a Cone; and as these were so hardy as not to be injured by Weather, and would grow in any Soil, they were then much esteemed, but since that unnatural Taste has been exploded, these Plants are seldom admitted into Gardens, unless to cover Walls, or run over Grottos, &c. for which Purpose there is no Plant so well adapted.

There are two Varieties of this, one with Silver-striped Leaves, and the other with yellowish Leaves on the Top of the Branches; these are preserved in some Gardens for Variety.

These Plants are easily propagated by their trailing Branches, which send forth Roots their whole Length, which Branches, being cut off, and planted, will grow in almost any Soil or Situation, and may be trained up to Stems, or suffered to remain Climbers, to cover Walls, Pales, &c.

They may also be propagated by Seeds, which should be sown soon after they are ripe, which is in the Beginning of *April*; if these are kept moist, and shaded, they will grow the same Spring, otherwise they will remain a Year in the Ground, therefore few Persons trouble themselves to propagate the Plants in this Way, the other being much more expeditious.

While the Stalks of this Plant trail, either on the Ground, or upon Walls, or other Support, they do not produce any Flowers, which has occasioned its being called sterile, or barren Ivy; but when the Branches get above their Support, they produce Flowers at the End of every Shoot; these appear in *September*, and are succeeded by Berries, which turn black before they are ripe, and are formed into round Bunches, called *Corymbi*, and from these the Epithet of *Corymbus*, so frequently used by Botanists, is taken.

The Leaves of this Plant are frequently applied to Issues to keep them cool, and free from Inflammations; they are also used for curing of Scabs, Sores, and scald Heads. *Mr. Boyle*, in his *Usefulness of Experimental*

Philosophy, commends a large Dose of the full ripe Berries, as a Remedy against the Plague; but *Schroder* says, they purge upward and downward. The Gum of Ivy is caustick, but is recommended by some to take Spots and Freckles out of the Face.

There is Mention made of another Species of Ivy, which is titled *Hedera Poetica*, by *Caspar Baubin*; this grows in many of the Islands of the *Archipelago*, and produces yellow Berries; but as I have not seen this Plant, I cannot determine if it is a distinct Species. *Dr. Linnaeus* supposes it to be only a Variety, though he has not seen the Plant; but *Tournefort*, who gathered it in the *Levant*, puts it down as a different Sort.

The 2d Sort grows naturally in all the Northern Parts of *America*; it was first brought to *Europe*, from *Canada*, and has been long cultivated in the *English* Gardens, chiefly to plant against Walls, or high Buildings to cover them, which these Plants will do in a short Time, for they will shoot almost 20 Feet in one Year, and will mount up to the Top of the highest Building; but as the Leaves fall off in Autumn, the Plants make but an indifferent Appearance in Winter, and as it is late before they come out in the Spring, they are not much esteemed, unless for such Situations, where better Things will not thrive, for this Plant will thrive in the Midst of *London*, and is not injured by the Smoke or the Closeness of the Air. The Stalks of these Plants put out Roots, which fasten themselves into the Joints of the Walls, whereby they are supported.

This may be propagated by Cuttings, which if planted in Autumn on a shady Border, will take Root, and by the following Autumn will be fit to plant where they are designed to remain.

HEDERA TERRESTRIS. See *Glechoma*.

HEDGES. Hedges are either planted to make Fences round Inclosures, or to part off and divide the several Parts of a Garden; when they are designed as outward Fences, they are planted either with Hawthorn, Crabs, or Black Thorn, which is the Sloe; but those Hedges which are planted in Gardens, either to surround Wilderness Quarters, or to screen the other Parts of a Garden from Sight, are planted with various Sorts of Plants, according to the Fancy of the Owner, some preferring ever-green Hedges, in which Case the Holly is best, next the Yew, then Laurel, *Laurustinus*, *Phillyrea*, &c. Others, who make Choice of the deciduous Plants, prefer the Beech and Hornbeam, *English Elm*, or the Alder, to any other; I shall first treat of those Hedges which are planted for outside Fences, and afterward briefly touch on the other.

These Hedges are most commonly made of Quick, yet it will be proper, before planting, to consider the Nature of the Land, and what Sorts of Plants will thrive best in that Soil, whether it be Clay, Gravel, Sand, &c. likewise what the Soil is from whence the Plants are to be taken, for if the Land they are taken from is better than that in which they are to be planted, it will be more difficult to get them to grow. As for the Size, the Sets ought to be about the Bigness of a Goose Quill, and cut within about 4 or 5 Inches of the Ground, they should be fresh taken up, strait, smooth, and well rooted. Those Plants which are raised in the Nursery are to be preferred to

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all others, and if raised on a Spot near the Place it will be best.

Secondly, If the Hedge has a Ditch, it should be made six Feet wide at Top, and one Foot and a Half at Bottom, and 3 Feet deep, that each Side may have a proper Slope; for when the Banks are made too upright, they are very subject to fall down after every Frost, or hard Rain; besides if the Ditches are made narrower, they are soon choked up in Autumn by the falling Leaves, and the Growth of Weeds, nor are they a sufficient Fence to the Hedge against Cattle, where they are narrower.

Thirdly, If the Bank be without a Ditch, the Sets should be set in 2 Rows, almost perpendicular, at the Distance of a Foot from each other, in the quin-cunx Order, so that in Effect they will be but 6 Inches asunder.

Fourthly, the Turf is to be laid with the Grass Side downwards, on that Side of the Ditch the Bank is designed to be made, and some of the best Mould should be laid upon it to bed the Quick; then the Quick is to be laid upon it, a Foot asunder, so that the End of it may be inclining upwards.

Fifthly, When the first Row of Quick is laid, it must be covered with Mould, and the Turf laid upon it, as before, and some Mould upon it, so that when the Bank is a Foot high, you may lay another Row of Sets against the Spaces of the lower Quick, and cover them as the former was done, and the Bank is to be topped with the Bottom of the Ditch, and a dry or dead Hedge laid on the other Side, to defend the under Plantation from the Cattle.

In making these dead Hedges, there should be Stakes driven into the loose Earth, at about 2 Feet and a Half Distance, so low as to reach the firm Ground.

Oak Stakes are accounted the best, and Black Thorn and Sallow the next; then let the small Bushes be laid at Bottom, but not too thick, for that will cause the Bushes to rot, but the upper Part of the Hedge should be laid with long Bushes to bind the Stakes in with, by interweaving them.

And, in order to render the Hedge yet stronger, you may edder it (as it is called,) *i. e.* bind the Top of the Stakes in with some small long Poles, or Sticks, on each Side, and when the Eddering is finished, drive the Stakes anew, because waving the Hedge and Eddering is apt to loosen the Stakes.

The Quick must be kept constantly weeded, and secured from being cropped by Cattle, and in February it will be proper to cut it within an Inch of the Ground, which will cause it to shoot strong, and help it much in the Growth.

When a Hedge is of about 8 or 9 Years Growth, it will be proper to plash it; the best Time for this Work is either in *October* or *February*.

When a Hedge is grown old, *i. e.* of about 20 or 30 Years Growth, and there are in it old Stubs, as well as new Shoots, the old Stubs should be cut sloping off within 2 or 3 Inches of the Ground, and the best and longest of the middle Size should be left to lay down, and some of the strongest, at the Height of 5 or 6 Feet, according as you design the Height of the Hedge to be, may be left to serve instead of Stakes, and fresh Stakes should

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be put in those Places where they are wanting; the Hedge should be thinned, so as to leave on the Stubs only such Shoots as are designed to be of Use, that there may be Room left to put a Spade in between them; the Ditch also should be cleansed, and each Side of the Slope kept as in a new Ditch; and where the Earth is washed from the Roots of the Quick, or is hollow, face it anew with so much of the first Spit of Earth that is dug out of the Ditch, as there is Occasion for, and lay what is dug out at the second Spit, on the Top of the Bank, for if it be laid on the Side, or Face of the Bank, it will slip into the Ditch again when Wet comes, and take a great Deal of the Bank along with it.

In plashing Quicks, there are two Extremes to be avoided; the first is, laying it too low, and too thick; because it makes the Sap run all into the Shoots, and leaves the Plashes without Nourishment, which, with the Thickness of the Hedge, kills them.

Secondly, It must not be laid too high, because this draws all the Sap into the Plashes, and so causes but small Shoots at the Bottom, and makes the Hedge so thin, that it will neither hinder the Cattle from going through, nor from cropping it.

When the Shoot that is designed to be plashed is bent, give it a small Cut with a Bill, half through, sloping a little downwards, and then weave it about the Stakes, and trim off the small superfluous Branches that straggle out too far on both Sides of the Hedges.

If the Stubs are very old, cut them quite down, and secure them with good dead Hedges on both Sides, till the young Shoots are got up tall enough to plash, and plant new Sets in the void Spaces.

In making a Hedge, if it be set with Crab, or Apple Stocks, it will be proper to leave one standing uncut up at every 30 or 40 Feet, on both Sides the Hedge, if the Ground be your own; which being done, they may be so ordered, by pruning or staking, that one may lean into one Ground, and the other into another, &c.

These Stocks should be pruned up every Year, till they are brought out of the Reach of the Cattle, and then they may be grafted with the Red Streak, Gennet-moist, or what other Fruit you please.

If the Stocks be of Apple Kernels, they may stand ungrafted, and they will yield very good Cyder Fruit, but then such Stocks as are not grafted, will be longer before they bear; and also, when you do graft, you may be certain of your Kind; but if you find a very natural Stock, which by Leaf, Shoot, and Bud, appears likely, you may try it, and so you may have a new fine Fruit, and if you do not like it you may graft it when you please.

As for the rest of the Hedge, when it has shot 4 or 5 Years, you may lay it to make a Fence with, for doing which, take the following Directions:

First, At every Laying to lay down some old Plashes; or, if the Hedge be thin, young ones; but they must be so laid, as to point with their Ends to the Ditch Side of the Bank, the Ends being kept low on the Bank; by being so ordered, they will the better thicken the Bottom of the Hedge, and keep up the Earth of the Bank.

Secondly, To heighten the Bank every Time you lay Earth

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Earth on it, so as to cover the Layers, all but the Ends, this Earth will very much help the Quick; and by heightening the Banks, and deepening the Ditch, you will render the Fence the better.

Thirdly, not to cut the Plashes too much, but just so as they may bend down well, not to lay them too upright, as some do, but to lay them near to a Level; and by so doing, the Sap will the better break out at several Places, and not run so much to the Ends, as it will when they lie much upon the Slope.

If you have much Wood to spare, you may cut up great Part of those that grow near the Ditch, but then you ought to hang the Bank with Bushes, to prevent Cattle from cropping them the first Year; these will shoot strong, secure the Hedge, keep up the Bank, and thicken the Bottom of the Hedge.

Fourthly, Take Care to lay the Hedge pretty thick, and turn the Beard on the Ditch Side, but you must not let the Beard hang uncut (though it makes a good Shew at the first making), but you must cut off all the straggling Boughs within half a Foot of the Hedge on both Sides, and these will cause it to shoot strong at these Places, and make the Hedge much the thicker.

Fifthly, If the Bank be high, make the Hedge so low, that it may just serve for a Fence the first Year, for it will soon grow higher, and the lower the Hedge is made, the better the Quick will grow, and also the thicker at the Bottom; but Care must be taken to preserve it from Cattle on the Field Side for the two first Years that it is made.

Sixthly, if you would have a good Hedge, or Fence, you should new lay it once in 14 or 15 Years, and constantly root out Elder, Travellers Joy (which some call Bull-bine), Bryony, &c. and do not leave too many high Standards, or Pollards in it, though the Elm is one of the best, also no dead Wood is to be left in the Bottom of the Hedges, for that will choke the Quick; but if there be a Gap, the dead Hedge should be made at a Distance.

The Crab is also frequently planted for Hedges, and if the Plants are raised from the Kernels of the small wild Crab, they are much to be preferred to those raised from the Kernels of all Sorts of Apples without Distinction, because the Plants of the true small Crab never shoot so strong as those of the Apples, so may be better kept within the proper Compass of a Hedge, and as they have generally more Thorns upon them, they are better guarded against Cattle, &c. than the other; besides, the Plants of the Crab will grow more equal than those raised from the Kernels of various Kinds of Apples, for these always produce a Variety of Plants, which differ from each other in their Manner of Growth, as much as in the Size and Flavour of their Fruits, so that Hedges made of these will not appear so well, nor can be so well managed as the other.

Some Persons intermix Crab with the White Thorn in their Hedges, but this is not a good Method; for the Plants of the Crab will grow much stronger than those of the White Thorn, so that the Hedge will not be of equal Growth, which is not near so beautiful, or useful, as when the Plants of a Hedge keep Pace in their Growth.

The Black Thorn, or Sloe, is also frequently planted

for Hedges, and is a strong durable Plant for that Purpose, especially as it is so strongly armed with Thorns, that Cattle seldom care to brouze upon it; but where this is planted, the best Way is to raise the Plants from the Stones of the Fruit; for all those taken from the Roots of old Trees, spawn, and put out Suckers in such Plenty from their Roots, as to spread over, and fill the neighbouring Ground to a considerable Distance on each Side of the Hedge; and this Plenty of Suckers drawing away the Nourishment from the old Plants of the Hedge, they never grow so well as where there are few or no Suckers produced, which those Plants which are propagated from the Stones send not forth, or at least but sparingly, therefore may with little Trouble be kept clear of them. The best Method of raising these Hedges is, to sow the Stones in the Place where the Hedge is intended (where it can be conveniently done), for then the Plants will make a much greater Progress than if transplanted; but the Objection to this Method will arise from the Difficulty of securing the young Plants from the Cattle; but this can have little Force, when it must be considered, that if the Hedge is planted, it must be fenced for some Years, to prevent the Cattle from destroying it; therefore the same Fence will do for it when sown, nor will this require a Fence much longer than the other. For the Plants which stand unremoved, will make a better Fence in 7 Years, than that which is planted, tho' the Plants should be of 3 or 4 Years Growth when planted, which is, what I have seen 2 or 3 Times, where the Experiment has been tried. The Stones of this Fruit should be sown early in January, if the Weather will permit, but when they are kept out of the Ground longer, it will be proper to mix them with Sand, and keep them in a cool Place. The Bushes of the Black Thorn are by much the best of any, for dead Hedges, being of longer Duration, and having many Thorns, neither the Cattle nor the Hedge-breakers, will care to meddle with them; these Bushes are also the best to be used for under Ground Drains, for draining Land; for they will remain sound a long Time, when the Air is excluded from them.

The Holly is sometimes planted for Hedges, and is a very durable strong Fence, but where it is exposed, there will be great Difficulty to prevent its being destroyed, otherwise it is by far the most beautiful Plant, and being an Evergreen, will afford much better Shelter to Cattle, in Winter, than any other Sort of Hedge, and the Leaves being armed with Thorns, the Cattle will not care to brouze upon it. Another Objection to this Plant is the slow Growth, so that Hedges planted with this Plant, require to be fenced a much longer Time than most others. This is a Reason which must be admitted, to prevent this being generally practised; but in such Grounds as lie contiguous to, or in Sight of Gentlemens Houses, these Sort of Hedges will have an exceeding good Effect, especially when they are well kept, as they will appear beautiful at all Seasons of the Year; and in the Spring of the Year, when the sharp Winds render it unpleasant to walk abroad in exposed Places, these Hedges will afford good Shelter, as they will effectually keep off the cold Winds, if they are kept close and thick. The surest Method of raising these Hedges is, by sowing the Berries in the Place

where they are to stand, but these Berries should be buried in the Ground one Year before they are sown, by which Method they will be prepared to grow the following Spring. The Way of doing this is, to gather the Berries about *Christmas* (which is the Time they are usually ripe), and put them into large Flower Pots, mixing some Sand with them, then dig Holes in the Ground, into which the Pots must be sunk, covering them over with Earth about ten Inches thick; in this Place they may remain till the following *October*, when they shou'd be taken up, and sown in the Place where the Hedge is intended. The Ground from this Hedge should be well trenched, and cleared from the Roots of all bad Weeds, Bushes, Trees, &c. Then two Drills should be made at about a Foot Distance from each other, and about two Inches deep, into which the Seeds should be scattered pretty close, lest some should fail; for it is better to have too many Plants come up, than to want. The Reason of my advising two Drills is, that the Hedge may be thick to the Bottom, which in a single Row rarely happens, especially if there is not great Care taken of them in the Beginning. When the Plants come up, they must be carefully weeded; for if the Weeds are permitted to grow among them, they will soon destroy them; or weaken them so much, that they will not recover their Strength in a long Time. This should be constantly observed by every Person who is desirous to have good Hedges of either Sort; for when the Weeds are suffered to grow near the Plants, they will not only rob them of a great Part of their Nourishment, but also prevent their putting out Shoots near the Ground, which will occasion the Bottom of the Hedge to be thin and naked.

When these Holly Hedges are designed to be kept very neat, they should be sheered twice a Year, in *May* and *August*, but if they are only designed as Fences, they need not be sheered oftener than once a Year, which should be about the latter End of *June*, or Beginning of *July*, and if this be well performed, the Hedges may be kept very beautiful.

The Fences made to secure these Hedges from Cattle while they are young, should be contrived to admit as much free Air as possible, which is absolutely necessary for the Growth of the Plants; for when they are crowded on each Side with dead Hedges, the Plants seldom thrive well. The best Sort of Fences for this Purpose, are those made with Posts and Rails, or instead of Rails, three Ropes drawn from Post to Post, and Holes made in the Posts to draw the Ropes through; this is the cheapest Fence of this Kind, and will appear very handsome; but if Sheep are not admitted into the Fields, there will be Occasion for two Ropes only, which will be enough to keep off larger Cattle, and if the Ropes are painted over with a Composition of melted Pitch, brown *Spanish* Colour, and Oil, mixed well together, they will last sound several Years; and these Sort of Fences never obstruct the Air, and the Place, at the same Time being open to View, the Weeds will be better discovered than when the Fences are close. In the latter Case, the Hedges are sometimes suffered to be over-run with Weeds, by their being excluded from the Sight, so are frequently forgotten, especially in moist Weather, when the Weeds grow more luxuriant.

There are some Persons who intermix Holly with the White Thorn, in making their Hedges, which, if rightly managed, will have a good Effect, especially when young; but when this is practised, the Holly should be planted so near, that the Hedge may be entirely formed of it as it grows up, when the White Thorn should be quite rooted out; for as these advance, they will not keep Pace in their Growth, so will not appear beautiful when intermixed.

When a Hedge of Holly is intended to be made by Plants, the Ground should be well trenched, as was before advised for the Seeds, and (unless the Ground be very wet) the Plants set in *October*, but, in wet Ground, *March* is preferable. The Plants should not be taken from a better Soil than that in which they are to be planted; for when it so happens, the Plants are much longer before they recover this Change, than those taken from a leaner Soil. If the Plants have been before removed two or three Times, they will have better Roots, and will be in less Danger of miscarrying, because they may be removed with Balls of Earth to their Roots. When the Frost comes on, if some Mulch be laid on the Ground near the Roots of the Plants, it will prevent the tender Fibres, which may then have been put out, from being destroyed by the Cold. I would never advise the planting Hedges with Holly Plants, of above 5 or 6 Years Growth, from the Berries; for when they are older, if they take to grow, they are longer before they form a good Hedge, than Plants much younger; and if they have been twice before transplanted, they will more certainly grow.

I shall next treat of Hedges for Ornament in Gardens: These are sometimes planted with Ever-greens, especially if they are not intended to grow very high; in which Case, they are planted with deciduous Trees. Ever-green Hedges are planted with Holly, Yew, Laurel, *Laurustinus*, *Phillyrea*, *Alaternus*, ever-green Oak, and some others of less Note. The Holly is preferable to any other, for the Reasons before given. Next to this, most People prefer the Yew, on Account of its growing so very close; for when these Hedges are well kept, they will be so thick that a Bird cannot get through them; but the dead Colour of the Yew, renders these Hedges less agreeable. The Laurel is one of the most beautiful Greens of any of the ever-green Trees, but then it shoots so luxuriant, as to render it difficult to keep the Hedges planted with it, in tolerable Shape; besides, the Leaves being very large, if the Hedge is clipped with Sheers, the Leaves will be cut through, which gives them a bad Appearance; therefore where there are Hedges of this Kind, it will be the best Way to prune them with a Knife, cutting the Shoots just down to a Leaf. And although by this Method the Hedge cannot be rendered so even as when cut with Sheers, yet it will have a much better Appearance than that of most of the Leaves being cut through and stubbed, in the Manner they must be when sheered.

The *Laurustinus* is also a very fine Plant for this Purpose, but the same Objection is to be made to this as hath been to the Laurel; and as one of the great Beauties of this Plant is in its Flowers, which are produced in the Winter and Spring, so when these are sheered, the Flowers are generally cut off, by which their Beauty

is lost. Nor can this be avoided, where the Hedge is to be kept in close Order, therefore this Plant is not so proper for the Purpose; but in Places where Walls or other Fences are designed to be hid, there is not any Plant better adapted than this, provided it is rightly managed; for the Branches are slender and pliable, so may be trained up close to the Fence, whereby it may be entirely covered; and if, instead of clipping these with Sheers, they are pruned with a Knife, they may be so managed, as to have them full of Flowers from the Ground upward. This may be effected by pruning them in *April*, when the Flowers are going off, cutting out those Shoots that have flowered, or project too far from the Fence; always cutting close to the Leaf, that no Stubs may be left; but those new Shoots of the same Spring must by no Means be shortened, because the Flowers are always produced at the Extremity of the Shoots of the same Year; therefore when these are topped, as they must be by sheering, there can be few or no Flowers upon these Plants, except toward the Top, where the Sheers have not passed. By this Method of Knife Pruning, the Leaves will also be preserved entire, and the Hedge may always be kept enough within Compass; and so thick, as fully to answer the Purpose of covering the Fence; and by the Shoots growing a little irregular, it will make a much better Appearance than any shorn Hedge whatever.

The small leaved and the rough leaved *Laurustinus* are the best Sorts for this Purpose, because their Branches grow closer together than those of the shining leaved; they are also more hardy, and flower much better than the other, when growing in the open Air.

The True *Phillyrea* is the next best Plant for Hedges; it is by the Gardeners called the True *Phillyrea*, to distinguish it from the *Alaternus*, which they simply call the *Phillyrea*. The Branches of this are strong, the Leaves pretty large, and of a strong green Colour. And as this is a Plant of middling Growth, the Hedges planted with this may be led up to the Height of 10 or 12 Feet; and if these Hedges are kept narrow at the Top, that there may not be too much Width for the Snow to lodge on them, they may be rendered very close and thick; and being a very good green, will make a fine Appearance.

The *Alaternus* was formerly much more cultivated in the *English* Gardens, than at present. This was often planted to form Hedges, but the Branches are too pliant for this Purpose, being frequently displaced by strong Winds, which render these Hedges unsightly; they also shoot very irregular and thin, so that the Middle of the Hedge is frequently open and wide, and only the Sides of them can be kept tolerably close, and that must be by often clipping them. If we add to this, their being frequently laid or broken down by Snow in the Winter, it must be deemed an improper Plant for this Purpose.

The *Ilex*, or ever-green Oak, is also planted for Hedges; and where these are designed to grow pretty tall, it is a fit Plant for the Purpose; because it is a Plant of large Growth, especially the Sort most common in *England*; for there are two Sorts of them which grow in the South of *France* and *Italy*, that are of much humbler Growth, so are better adapted to this Purpose,

especially where the Hedge is not intended to be high, but these are not at present common here. When these Hedges are planted very young, and kept close trained from the Beginning, they may be very close from the Ground to the Height of 20 Feet or more; but these must always be kept narrower at the Top than below, that there may not too much Snow lodge upon them in the Winter, which is apt to break and displace the Branches, whereby the Hedges will be rendered unsightly.

There are also some Persons who have planted the *Pyracantha*, or ever-green Thorn, Juniper, Box, Cedar of *Virginia*, Bay, &c. as also the *Halimus*, or Sea Purslane, and the Furz, Rosemary, and several other Plants for Hedges; but the five Sorts first mentioned having very pliant Branches, which require to be supported, and the three last being often destroyed by severe Frost, renders them unfit for this Purpose; nor are there other Sorts of ever-green Plants in the *English* Gardens, so well adapted for Hedges, as those before-mentioned.

The deciduous Trees, usually planted to form Hedges in Gardens, are the following Sorts.

The Hornbeam is much esteemed for this Purpose, especially where they are not required to be very high, or not wanted to grow very fast; for this Plant, while young, doth not make so great Progress as many others; but as it is slower of Growth, the Hedges may be kept neat with less Trouble than most other Plants will require; and the Branches naturally growing very close, they will make one of the closest Hedges of all the deciduous Trees; but as the Leaves of this Tree continue upon the Branches all the Winter, and until the Buds in the Spring force them off, they have a bad Appearance during the Winter Season.

The Beech is also a very proper Tree for this Purpose, having the same good Qualities as the Hornbeam; but the Leaves of this continue late in Winter upon the Branches, when they will have a bad Appearance; besides, the Litter which is occasioned by their Leaves gradually falling most Part of the Winter, prevents the Garden from being made clean a great while longer, than if there are none of these Trees planted.

The small leaved *English* Elm, is also a proper Tree for tall Hedges; if these are planted young, and kept closely clipped from their first setting out, the Hedges may be trained up to the Height of 30 or 40 Feet, and be very close and thick the whole Height. But when these Trees are planted for this Purpose, they should not be crowded so close together as they usually are; by which Method, when the Trees have stood some Years, if they have thriven well, their Stems approach so near each other, that few Branches can be maintained below, whereby the Bottom of the Hedge will be naked; therefore they should not be planted closer together than 7 or 8 Feet, or if they are 10 Feet it will be still better. And although at this Distance they will not form a close Hedge so soon as when the Trees are planted together, yet they will in a few Years recompense for that, by their growing much closer and better from the Ground upward.

The Dutch Elm was formerly in great Esteem for Hedges, being quick of Growth, and thriving in such Soils as the *English* Elm would not grow; but the wretched

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wretched Appearance which these Hedges made, after they had been growing some Years, very justly occasioned their being almost universally rooted out of Gardens, for a more abominable Plant was never introduced into Gardens than this.

The Lime Tree hath also been recommended for Hedges, and in some of the old Gardens there were many planted with this Tree, which, for a few Years after planting, made a tolerable Appearance, especially when they grew on a moist Soil; but after they had stood some Years, they grew very thin at Bottom, and by being sheered at Top, they were rendered very stubby and unsightly, their Leaves growing very thinly on the Branches, frequently turning of a black disagreeable Colour, and falling off very soon in the Autumn, and sometimes in the Summer in dry Seasons, so that few Persons make Use of them at present for this Purpose: Nor should any of the very strong shooting Trees be applied to this Use; for the more they are cut, the stronger they will shoot, and of Course will appear very unsightly; besides, often cutting these Hedges occasions great Trouble and Expence, and frequent Litters in the Garden.

The Alder is frequently planted for Hedges, and where the Soil is moist, there is not any of the deciduous Trees equal to it for this Purpose; for the Leaves are of a lively green, continuing fresh till late in the Autumn; and when they decay, their Litter is soon over, for they all drop in a short Time.

There are, besides the Trees before-mentioned, many of the flowering Shrubs which have been planted to form Hedges; such as Roses, Honeysuckles, Sweetbriar, &c. but these do not make a good Appearance, being more difficult to train; and if they are cut to keep them within Compass, their Flowers, which are their greatest Beauty, will be entirely destroyed. But as these are but of low Growth, they are not proper to plant where the Hedges are to be of any Height.

Although I have given these full Directions for planting and ordering these Hedges for the Pleasure Garden, yet I am far from recommending them as ornamental or useful. But as there are Numbers of Persons who may differ from me in their Opinion, and therefore might think it a Deficiency in my Book, had I not given these Instructions; to avoid their Reproach, I have inserted as much as I think will be necessary for obtaining these Hedges, where-ever they are desired, and at a less Expence than the late Method of planting them hath been generally attended with; where it is not uncommon to see four Times the Number of Trees planted in these Hedges as would have been necessary, or that can remain long close together with any Beauty. But most People who plant, are in too great a Hurry to have their Gardens filled; and therefore frequently plant so close, that in 3 or 4 Years (if their Trees thrive) three Fourths of them will require to be taken away again, to make Room for those left to grow; and there are not wanting Persons, ready enough to encourage this Practice, since their own Interest is thereby promoted.

The Taste in Gardening having been greatly altered of late Years for the better, these clipped Hedges have been almost excluded; and it is to be hoped, that a little Time will entirely banish them out of the English

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Gardens, as it has already done by the shorn Evergreens, which a few Years since were esteemed the greatest Beauties of Gardens. The latter was introduced by the Dutch Gardeners, and that of tall Hedges with Treillage Work, was in Imitation of the French Gardens; in some of which, the Expence of the Iron Treillage, to support the Trees which composed their Cabinets, Pavilions, Bowers, Porticos, and other Pieces of rural Architecture, amounted to a very great Sum. I have been informed, this Work, in one Garden, has cost above 20000 Crowns; and this only to train up Trees into the distorted Shape of Pilasters, Niches, Cornices, Pediments, &c. when, at the same Time, these can no longer retain the Forms intended, than they are kept closely shorn into them; for no sooner do the Trees begin to make fresh Shoots, but the whole Frame is altered; and instead of carrying the fine finished Appearance of a regular Piece of Architecture, it is grown into a rude unpolished Form. This expensive Sort of Work never made much Progress in England, but that Part of the French Taste, in surrounding all the several Divisions of Gardens with tall clipped Hedges, making great Alleys, forming the Walks into Stars, and the like stiff Performances, have too much obtained for some Years past in England; and the taller these clipped Hedges were, the more they were admired; though many Times they shut out from the View the Sight of some of the noblest Oaks, and other Timber Trees, growing in the Quarters; which are infinitely more pleasing to a Person of true Taste, than all the ridiculous Forms it is possible for Trees to be framed in by Art. Besides, when the Expence of keeping these Hedges, together with the great Litter they occasion when clipped, is considered, these, added to many other Reasons which might be given, are sufficient to exclude them out of Gardens; where they can never be esteemed necessary, but to shut out from the View the Sight of worse Objects.

HEDYPNOIS. See Hyoseris.

HEDYSARUM. *Lin. Gen. Pl.* 793. *Tourn. Inst. R. H.* 401. *Tab.* 225. French Honeysuckle.

The Characters are,

The Flower hath a permanent Empalement of 1 Leaf, cut into 5 Segments at the Top. It is of the Butterfly Kind, having an oblong compressed Standard, which is indented at the Point and reflexed; the Wings are oblong and narrow; the Keel is compressed, broader at the End, but convex at the Base. It hath 9 Stamina joined, and 1 standing separate, terminated by roundish compressed Summits; the Stamina are reflexed, having an Angle or Knee. In the Center is situated a long narrow Germen, supporting an Awl-shaped inflexed Style, crowned by a single Stigma. The Germen becomes a jointed Pod which is compressed, each Joint being roundish, and incloses a single Kidney-shaped Seed.

The Species are,

1. HEDYSARUM foliis pinnatis, leguminibus articulatis aculeatis, nudis, rectis, caule diffuso. *Hort. Cliff.* 365. French Honeysuckle with winged Leaves, naked, prickly, jointed Pods, and a diffused Stalk. *Hedysarum clypeatum, flore suaviter rubente. H. Eyst.* French Honeysuckle, with a delicate red Flower.

2. HEDYSARUM foliis pinnatis, leguminibus articulatis, aculeatis, tomentosis, caule diffuso. *Hort. Upsal.* 231. French

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French Honeyfuckle with winged Leaves, jointed, prickly, woolly Pods, and a diffused Stalk. *Hedysarum clypeatum minus, flore purpureo. Rai Hist.* Smaller French Honeyfuckle, with a purple Flower.

3. *HEDYSARUM foliis simplicibus ternatisque, floribus racemosis. Hort. Cliff. 232.* French Honeyfuckle with single and trifoliate Leaves, and Flowers in Bunches. *Hedysarum triphyllum Canadense. Cornut.* Three leaved French Honeyfuckle of Canada.

4. *HEDYSARUM foliis pinnatis, leguminibus articulatis, aculeatis, flexuosis. caule diffuso. Lin. Sp. Pl. 750.* French Honeyfuckle with winged Leaves, jointed prickly Pods which are waved, and a diffused Stalk. *Hedysarum annuum, siliqua aspera undulata intorta. Tourn.* Annual French Honeyfuckle, with a rough, waved, writhed Pod.

5. *HEDYSARUM foliis binatis petiolatis, floralibus sessilibus. Flor. Zeyl. 291.* French Honeyfuckle with two Leaves on a Foot Stalk, but those with the Flowers sitting close to the Stalks. *Hedysarum minus diphyllum, flore luteo. Sloan. Cat. 73.* Smaller two leaved French Honeyfuckle, with a yellow Flower.

6. *HEDYSARUM foliis ternatis, foliolis obovatis, floribus paniculatis terminalibus, leguminibus intortis.* French Honeyfuckle with trifoliate oval Leaves, Flowers growing in Panicles at the Ends of the Stalks, and intorted Pods. *Hedysarum triphyllum fruticosum, flore purpureo, siliqua varie distorta. Sloan. Cat. 73.* Three leaved shrubby French Honeyfuckle, with a purple Flower, and a variously distorted Pod.

7. *HEDYSARUM foliis ternatis subtus nervosis, caule glabro fruticoso floribus spicatis terminalibus.* Three leaved French Honeyfuckle, with Veins on their under Side, a smooth shrubby Stalk, with Flowers growing in Spikes at the Ends. *Hedysarum triphyllum fruticosum supinum, flore purpureo. Sloan. Cat.* Three leaved shrubby dwarf French Honeyfuckle, with a purple Flower.

8. *HEDYSARUM foliis ternatis, foliolis ovatis subtus sericeis, floribus spicatis alaribus terminalibusque.* Three leaved French Honeyfuckle, with oval Leaves sitting on their under Side, and Flowers in Spikes from the Side and the End of the Stalks. *Hedysarum triphyllum frutescens, foliis subrotundis & subtus sericeis, flore purpureo. Houst.* Three leaved shrubby French Honeyfuckle, with roundish Leaves, which are silky underneath, and a purple Flower.

9. *HEDYSARUM foliis ternatis, caulibus diffusis villosis, floribus spicatis terminalibus, calycibus villosissimis.* Three leaved French Honeyfuckle, with diffused Stalks which are hairy, Flowers growing in Spikes at the Ends of the Branches, and very hairy Empalements. *Hedysarum triphyllum humile, flore conglomerato calyce villosa. Houst.* Dwarf three leaved French Honeyfuckle, with Flowers growing in Clusters, and a hairy Cup.

10. *HEDYSARUM foliis ternatis, caulibus procumbentibus racemosis, floribus laxè spicatis terminalibus, leguminibus contortis articulis quadrangularibus.* Three leaved French Honeyfuckle, with branching trailing Stalks, Flowers growing in loose Spikes at the Ends of the Branches, and twisted Pods with square Joints. *Hedysarum triphyllum procumbens, foliis rotundioribus & minoribus, siliquis tenuibus & intortis. Houst.* Trailing

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three leaved French Honeyfuckle, with smaller and rounder Leaves, and narrow contorted Pods.

11. *HEDYSARUM foliis ternatis, foliolis obcordatis, caule erecto triangulo villosa, racemis terminalibus, leguminibus articulatis incurvis.* French Honeyfuckle with trifoliate Leaves whose Lobes are Heart-shaped, a triangular upright hairy Stalk, Flowers growing in long Bunches at the Ends of the Branches, and jointed incurved Pods. *Hedysarum triphyllum, caule triangulari, foliis mucronatis, siliquis tenuibus intortis. Houst.* Three leaved French Honeyfuckle, with a triangular Stalk, pointed Leaves, and a narrow contorted Pod.

12. *HEDYSARUM foliis ternatis obcordatis, caule paniculato, leguminibus monospermis glabris.* French Honeyfuckle with trifoliate Heart-shaped Leaves, a paniculated Stalk, and smooth Pods containing one Seed. *Hedysarum triphyllum, annuum, erectum, siliquis intortis, & ad extremitatem amplioribus. Houst.* Three leaved annual upright French Honeyfuckle, with contorted Pods, which are broad at their Extremity.

13. *HEDYSARUM foliis ternatis, foliolis obverse-ovatis, caule volubili, spica longissima reflexa.* Three leaved French Honeyfuckle, with obverse oval Lobes, a twining Stalk, and a very long reflexed Spike of Flowers. *Hedysarum triphyllum Americanum scandens, flore purpureo.* Three leaved climbing American French Honeyfuckle, with a purple Flower.

14. *HEDYSARUM foliis ternatis obcordatis, caulibus procumbentibus villosis, pedunculis unifloris.* Three leaved French Honeyfuckle with oval Heart shaped Leaves, trailing hairy Stalks, and Foot Stalks having a single Flower. *Hedysarum procumbens, trifolii fragiferi folio. Hort. Elth. 172.* Trailing French Honeyfuckle, with Leaves like the Strawberry Trefoil.

15. *HEDYSARUM foliis simplicibus ovatis obtusis. Hort. Cliff. 449.* French Honeyfuckle, with oval, obtuse, single Leaves. *Hedysarum humile, capparidis folio maculato. Hort. Elth. 170.* Low French Honeyfuckle, with a spotted Caper Leaf.

16. *HEDYSARUM foliis ternatis ovato-lanceolatis, subtus villosis, caule frutescente villosa.* Trifoliate French Honeyfuckle, with oval Spear-shaped Leaves, hairy on their under Side, and a shrubby hairy Stalk. *Quere.* Whether this be not the *Hedysarum foliis ternatis subovatis caule frutescente. Flor. Virg. 174.* Three leaved French Honeyfuckle, with oval Lobes and a shrubby Stalk.

17. *HEDYSARUM foliis ternatis, foliolo intermedio pedunculo longiore, racemis alaribus erectis longissimis.* French Honeyfuckle with trifoliate Leaves, the middle Lobe standing on a longer Foot Stalk, and very long Bunches of Flowers coming from the Sides of the Stalks.

18. *HEDYSARUM foliis simplicibus lanceolatis obtusis, caule fruticoso spinoso. Lin. Sp. Pl. 745.* French Honeyfuckle, with single, Spear-shaped, obtuse Leaves, and a prickly shrubby Stalk. *Albago Maurorum. Rauwolf. 94.* The Albago of the Moors.

19. *HEDYSARUM foliis simplicibus, cordato-oblongis integerrimis glabris.* French Honeyfuckle with single, oblong, Heart-shaped Leaves, smooth and entire. *Onobrychis Zeylanica aurantii folio. Pet. Hort. Seic. 247.* Cockhead of Ceylon with an Orange Leaf.

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The 1st Sort has been long cultivated in the *English* Gardens, for Ornament. This grows naturally in *Italy*; there are two Varieties of this, one with a bright red, and the other a white Flower, which very rarely vary from one to the other; but as there is no other Difference but in the Colour of their Flowers, so they are supposed to be the same Species.

It is a biennial Plant, which flowers the second Year, and soon after the Seeds are ripe, the Roots generally perish: This sends up several hollow, smooth Stalks, which branch out on each Side, leaning toward the Ground. These are from 2 to 3 Feet high, and are garnished with winged Leaves, composed of 5 or 6 Pair of oval Lobes, terminated by an odd one; the Leaves are placed alternate, and from their Base come out Foot Stalks, 5 or 6 Inches long, sustaining Spikes of beautiful red Flowers; these are succeeded by compressed jointed Pods, very rough, standing erect; in each of the Joints, is lodged one Kidney-shaped Seed. This Sort flowers in *June* and *July*, and the Seeds ripen in *September*. The white is only a Variety of this, and as such is sometimes preserved in Gardens.

They are propagated by sowing their Seeds in *April*, in a Bed of light fresh Earth; and when the Plants come up, they should be transplanted into other Beds of the like Earth, and in an open Situation, at about 6 or 8 Inches Distance from each other, leaving a Path between every 4 Rows, to go between them to hoe, and clear them from Weeds. In these Beds they may remain until *Michaelmas*, and then they may be transplanted into the large Borders of a Parterre or Pleasure Garden, allowing them at least 3 Feet Distance from other Plants, amongst which they should be interspersed, to continue the Succession of Flowers; where they will make a fine Appearance when blown, especially the red Sort, which produces very beautiful Flowers.

As these Plants decay after they have perfected their Seeds, so there should annually be a fresh Supply of Plants raised, where they are desired, for the old Roots seldom continue longer. They are very proper Ornaments for large Borders, or to fill up Vacancies among Shrubs, but they grow too large for small Borders, unless their Stalks are pruned off, leaving only 2 or 3 on each Plant; which, if kept upright with Sticks, will prevent their hanging over other Flowers. They are propagated for supplying the Markets with Plants, to adorn the *London* Gardens and Balconies, by the Gardeners in the Neighbourhood of *London*.

The 2d Sort is an annual Plant, which grows naturally in *Spain* and *Portugal*; the Leaves of this are narrow and oblong, 4 or 5 Pair being placed along the Midrib, with an odd one at the End; the Stalks are terminated by small Spikes of purple Flowers, which are succeeded by small rough Pods, shaped like those of the former Sort. This Plant is preserved in Botanick Gardens for Variety; it is propagated by Seeds, which should be sown the Beginning of *April*, in the Place where the Plants are to remain, and will require no other Culture but to thin them where too near, and keep them clean from Weeds. This flowers in *July*, and the Seeds ripen in Autumn.

The 3d Sort hath a perennial Root, which will abide many Years, if planted in a dry Soil. This is propagated

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by sowing the Seeds in the Manner directed for the former; but when the Plants are come up two Inches high, they should be transplanted where they are to remain for good; but if they are not too thick in the Seed Bed, they may be suffered to remain there until the following Autumn; at which Time they should be carefully taken up, and transplanted into the Borders where they are designed to stand; for their Roots generally run down very deep, so that it is not safe to remove them often. This Plant produces its Flowers about the same Time of the Year as the former, and if the Season proves favourable, perfects its Seeds in Autumn; and the Roots will abide in the open Air very well, resisting the severest Cold, provided they are planted in a dry Soil.

The 4th Sort is an annual Plant, which grows naturally in the *Levant*. This hath some Resemblance of the first, but is much smaller; the Stalks rise near a Foot high, and are garnished with winged Leaves, composed of 2 or 3 Pair of oval Lobes terminated by an odd one; the Flowers come out in Spikes at the Top of the Stalks, which are of a pale red, intermixed with a little blue. These appear in *July*, and are succeeded by jointed Pods, waved on both Sides, forming an obtuse Angle at each Joint; the Seeds ripen in the Autumn. This is propagated as the second Sort, and is equally hardy.

The 5th Sort grows naturally in both *Indies*; the Seeds were sent me from *La Vera Cruz*, by the late Dr. *Houffoun*. This is an annual Plant, with a long Tap Root, which runs deep in the Ground, sending out 1 or 2 Stalks, which rise about 9 Inches high, the lower Part being garnished with oval Leaves by Pairs on each Foot Stalk, but the upper Part of the Stalk where the Flowers come out, is garnished with small Leaves, ending in acute Points, sitting close to the Stalks, and at each of these is situated a single small yellow Flower, inclosed by the two Leaves. These make but little Appearance, and are succeeded by oblong Pods, containing one Kidney-shaped Seed.

The 6th Sort was sent me by the late Dr. *Houffoun* from *La Vera Cruz*, where he found it growing naturally, as it also does in *Jamaica*. This is an annual Plant, which rises with a shrubby Stalk upward of 4 Feet high, dividing into several Branches, garnished with oblong oval Leaves that are trifoliate, standing on pretty long Foot Stalks, the middle Lobe standing an Inch beyond the other two; the Branches are terminated by long loose Panicles of purple Flowers, which are succeeded by narrow jointed Pods which are twisted. These Plants flower in *July*, and their Seeds ripen in the Autumn.

The two last mentioned are tender Plants, so their Seeds must be sown in the Spring on a hot Bed; and when they are fit to remove, they should be each planted in a separate small Pot, filled with light Earth, and plunged into a hot Bed, keeping them shaded from the Sun till they have taken new Root; then they must be treated as other tender Plants from hot Countries, always keeping them in the Stove or Glass Case, otherwise they will not flower or produce Seeds in *England*.

The 7th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me by the late Dr. *Houffoun*. This is a shrubby Plant, which rises about 5 Feet high, and divides into several Branches, garnished with trifoliate

late Leaves which are oval, the middle Lobe being much larger than the other two; the Stalks are terminated by long Spikes of small purple Flowers, which are succeeded by narrow Pods, strait on one Side, but jointed on the other.

The 8th Sort was sent me from *La Vera Cruz*, by the late Dr. *Houfoun*, who found it growing there naturally. This rises with a shrubby Stalk 6 or 7 Feet high, dividing into several Branches, garnished with trifoliate oval Leaves, silky and white on their under Side, but of a pale green on their upper Side; the Flowers come out in long narrow Spikes from the Wings, and at the End of the Branches, sitting close to the Stalks; they are small, of a bright purple Colour, and are succeeded by flat, smooth, jointed Pods, about one Inch long, each Joint having one Kidney-shaped Seed.

The two last Sorts will continue 2 or 3 Years, if the Plants are placed in the Bark Stove. They are propagated by Seeds, which must be sown on a hot Bed, and the Plants treated as those just before-mentioned; and in the Summer, when they have obtained Height, they should be removed into the Bark Stove, where they should constantly remain, allowing them a large Share of Air in warm Weather. These Plants seldom flower till the second Year, when they will produce Seeds which ripen in the Autumn.

The 9th Sort is an annual Plant, which grows naturally at *La Vera Cruz*. This seldom rises more than 8 or 9 Inches high, sending out several Branches from the Root, which are diffused and hairy; they are closely garnished with small, oval, trifoliate Leaves, a little hoary. The Flowers grow in close short Spikes, they are purple, and have very hairy Empalements.

The 10th Sort grows naturally in *Jamaica*. This hath ligneous trailing Stalks, a Foot and a Half long, sending out several Branches on each Side, garnished with small, round, trifoliate Leaves, of a pale green Colour; the Flowers are produced in very loose Spikes at the End of the Branches, they are small, of a pale purplish Colour, and are succeeded by narrow twisted Pods which are jointed, each Joint being four cornered, containing a single small compressed Seed.

The two last Sorts being annual, require the same Treatment as the 5th and 6th Sorts before-mentioned, with which Management they will flower and ripen their Seeds in this Country.

The 11th Sort is a shrubby Plant, which rises with triangular Stalks, 5 or 6 Feet high, dividing into several Branches, garnished with Heart-shaped trifoliate Leaves, ending in acute Points; the Flowers are produced in very long Spikes at the End of the Branches, which are of a pale purple Colour, and are succeeded by narrow jointed Pods variously twisted; the Seeds are small and compressed.

This Plant grows naturally in *Jamaica*, from whence the Seeds were sent me by the late Dr. *Houfoun*. It will continue 3 or 4 Years, if treated in the Manner directed for the 7th and 8th Sorts, and will perfect its Seeds in this Country.

The 12th Sort is annual, the Seeds of it were sent me from *Campeachy*. This hath a paniculated Stalk, which rises about 2 Feet high, garnished with Heart-shaped trifoliate Leaves; the upper Part of the Stalk branches

out into Panicles of Flowers of a pale purple Colour; these are succeeded by lunulated compressed Pods, which stand oblique to the Stalk, each containing one compressed Kidney-shaped Seed. This Sort is propagated by Seeds, and requires the same Treatment as the 5th and 6th Sorts.

The 13th Sort was sent me from *La Vera Cruz*. This hath a twining Stalk, which gets round the Trees and Shrubs which grow near it, and climbs to the Height of 10 or 12 Feet, garnished with obverse, oval, trifoliate Leaves, standing on pretty long Foot Stalks; the Flowers are produced in very long Spikes, which are reflexed; they are of a dark purple Colour, and sit close to the Stalk. This is an abiding Plant, which requires a Stove to preserve it in this Country, so the Plants should be treated as the 7th and 8th Sorts.

The 14th Sort is an annual Plant, which grows naturally in both *Indies*. The Seeds of this were sent me from the *Havannab* by the late Dr. *Houfoun*, it hath trailing Branches near a Foot long, garnished with round trifoliate Leaves, a little indented at the Top, very like in Shape to those of the Strawberry Trefoil; the Stalks and under Side of the Leaves are hairy; the Flowers are produced toward the End of the Branches, sometimes single, and at other Times two at a Joint, they are of a purple Colour and small; these are succeeded by Pods about an Inch long, strait on one Side, and jointed on the other. This flowers the End of *July*, and sometimes perfects Seeds here.

The 15th Sort is a low annual Plant, having slender Stalks near a Foot long, their lower Part being garnished with single oval Leaves, standing on slender Foot Stalks; their upper Part is adorned with Flowers, which come out by Pairs above each other, to the End of the Stalk; they are but small, and of a reddish yellow Colour; these are succeeded by jointed narrow Pods, which sit close to the Stalk, and are Sickle-shaped. The two last mentioned are annual Plants, which require the same Culture as the 5th and 6th Sorts.

The 16th Sort was sent me by the late Dr. *Dale*, from *South Carolina*. This hath a perennial Root, from which arise 2 or 3 shrubby hairy Stalks near 2 Feet high, branching out on every Side near the Top, and garnished with oval, Spear-shaped, trifoliate Leaves, hairy on their under Side, standing on short Foot Stalks; the Flowers are produced at the End of the Branches in short Spikes, they are of a purplish yellow Colour and small; the Stalks of this Sort decay every Autumn, and new ones arise in the Spring. It is propagated by Seeds, which should be sown on a hot Bed in the Spring, and when the Plants are fit to remove, they should be planted in separate small Pots, filled with light Earth, and plunged into a moderate hot Bed, observing to shade them until they have taken new Root; then they should have a large Share of Air admitted to them in warm Weather, and in Summer they may be exposed to the open Air, but in the Autumn they must be placed under a Frame to screen them from Frost; the following Spring some of these Plants may be shaken out of the Pots, and planted in a warm Border, where, if the Summer proves warm, they will flower; but these seldom perfect their Seeds, therefore 2 or 3 Plants should be put into larger Pots, and plunged into a moderate hot Bed,

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Bed, which will bring them early into flower; so that if the Glasses are kept over them in bad Weather, they will ripen their Seeds in Autumn, and the Roots will continue some Years, if screened from Frost in Winter.

The 17th Sort was sent me with the last, by the same Gentleman from *South Carolina*. This hath a perennial Root and an annual Stalk, which grows erect about 2 Feet high, garnished with long trifoliate Leaves, rounded at their Base where broadest, and narrow all the Way to a Point; they are near 3 Inches and a half long, and half an Inch broad at their Base, of a light green and smooth; the 2 Side Lobes sit pretty close to the Stalk, but the middle one sits on a Foot Stalk an Inch long; the Flowers are produced in long Spikes from the Wings of the Stalk, growing erect; the lower Part of the Spike is but thinly set with Flowers, but on the upper Part they are disposed very close; these are small, and of a bright yellow Colour, sitting very close to the Stalks, and are succeeded by jointed Pods strait on one Side.

This Plant is propagated by Seeds, and requires the same Treatment as the last mentioned, with which it will flower and produce ripe Seeds.

The 18th Sort grows naturally in *Syria*, where it is one of the Beauties of the Country. It rises with shrubby Stalks about 3 Feet high, which branch out on every Side, and are garnished with single Leaves, shaped like those of the broad leaved Knot Grass; they are very smooth, of a pale green Colour, and stand on short Foot Stalks; under these Leaves come out Thorns, near an Inch long, of a reddish brown Colour; the Flowers come out from the Side of the Branches in small Clusters, they are of a purple Colour in the Middle, and reddish about the Rims; these are succeeded by Pods, strait on one Side, and jointed on the other, bending a little in Shape of a Sickle. This Plant is at present rare in the *English* Gardens, it is propagated by Seeds, which will frequently lie a Year in the Ground before they vegetate, therefore should be sown in Pots filled with light Earth, and plunged into a moderate hot Bed; and if the Plants do not appear by the Beginning of *June*, the Pots should be taken out of the Bed, and placed where they may have only the Morning Sun, keeping them clean from Weeds; and in the Autumn, they should be plunged into an old Bed of Tanners Bark under a Frame, where they may be screened from the Frost and hard Rains in the Winter, and in Spring plunged into a fresh hot Bed, which will bring up the Plants: When these are fit to remove, they should be each planted into a separate small Pot, filled with light Earth, and plunged into a very moderate hot Bed, shading them from the Sun till they have taken new Root, then they should be gradually hardened to bear the open Air, into which they should be removed in *June*, placing them in a sheltered Situation, where they may remain till Autumn; when, if they are plunged into an old Tan Bed under a Frame, where, in mild Weather they may enjoy the free Air, and be protected from Frost, they will succeed better than if placed in a Green-house, or tenderly treated. I have seen this Plant growing in the full Ground, in a very warm Border, where, by covering it in frosty Weather, it had endured two Winters, but a severe Frost happening the third Winter, entirely killed it.

From this Shrub the *Persian Manna* is collected,

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which is an Exudation of the nutritious Juice of the Plant. This Drug is chiefly gathered about *Tauris*, a Town in *Persia*, where the Shrub grows plentifully. Sir George Wheeler found it growing in *Tinos*, and supposed it was an undescribed Plant. *Tournefort* found it in Plenty in many of the Plains in *Armenia* and *Georgia*, and made a particular Genus of it, under the Title of *Albagi*.

The 19th Sort grows naturally in *India*, from whence the Seeds have been lately brought to *Europe*, and several Plants have been raised in the *English* Gardens; these have Leaves so like those of the Orange Tree, as scarcely to be distinguished while young; but as there are not any Plants here of a large Size, so I can give no further Account of this Sort at present.

HEDYSARUM Zeylanicum majus & minus. See *Æschynomene*.

HEDYSARUM mimosa foliis. See *Æschynomene*.
HELENIUM. *Lin. Gen. Pl.* 863. *Helenastrum*. *Vaill. Aët. R. Par.* 1720. Bastard Sun Flower.

The Characters are,

It hath a Flower composed of several hermaphrodite Florets, which form the Disk, and female half Florets, which compose the Rays. The hermaphrodite Florets are tubulous, and cut into 5 Parts at the Brim; these have each 5 short hairy Stamina, terminated by cylindrical Summits, with an oblong Germen, supporting a slender Style, crowned by a bifid Stigma. The Germen becomes an angular single Seed, crowned by a small 5 pointed Empalement. The female half Florets in the Border, have short Tubes, and are stretched out on one Side like a Tongue to form the Ray; these are cut into 3 Segments at their Points, where they are broad. The female Flowers have no Stamina, but have an oblong Germen, which turns to a single Seed, like those of the hermaphrodite Flowers; these are all included in one common single Empalement, which spreads open, and is cut into several Segments.

The Species are,

1. HELENIUM foliis lanceolatis-linearibus integerrimis glabris, pedunculis nudis unifloris. *Helenastrum* with Spear-shaped narrow Leaves smooth and entire, and naked Foot Stalks with single Flowers. *Helenastrum folio longiore & angustiore*. *Vaill. Aët. R. Par.* 1720. Bastard Sun Flower with a longer and narrower Leaf.

2. HELENIUM foliis lanceolatis acutis serratis, pedunculis brevioribus, calycibus multifidis. *Helenastrum* with pointed Spear-shaped sawed Leaves, shorter Foot Stalks, and a many pointed Empalement. *Helenastrum folio brevioris & latiore*. *Vaill. Aët. R. S.* 1720. Bastard Sun Flower with a broader and shorter Leaf.

These Plants rise to the Height of 6 or 7 Feet in good Ground; the Roots, when large, send up a great Number of Stalks, which branch toward the Top; those of the first Sort are garnished with smooth Leaves, 3 Inches and a Half long, and half an Inch broad in the Middle, with entire Edges sitting close to the Stalks, and from their Base is extended a leafy Border along the Stalk, so as to form what was generally termed a winged Stalk, but *Linnaeus* calls it a running Leaf; the upper Part of the Stalk divides, and from each Division arises a naked Foot Stalk, about 3 Inches long, sustaining one yellow Flower at the Top, shaped like a Sun Flower, but much smaller, having long Rays, jagged pretty deep into 4 or 5 Seg-

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3 Segments; these appear in July, and there is a Succession of Flowers on the Plants till the Frost puts a Stop to them.

The 2d Sort hath the Appearance of the first, but the Leaves are not 3 Inches long, and are more than an Inch broad in the Middle, ending in acute Points, and sharply sawed on their Edges. The Flowers stand on shorter Foot Stalks, growing closer together, for the Stalks of this do not branch near so much as those of the other; they both flower at the same Season.

There is also another Sort with Leaves as narrow as the first, which are acutely indented on the Edges. The Stalks branch at the Top, somewhat like those of the first, but the middle Flowers have much shorter Foot Stalks than those which branch on the Side, and the Foot Stalks are garnished with small Leaves, almost to the Top; but I am not certain if this is a distinct Species, or only a Variety which has accidentally risen from the Seeds of the other.

These Plants are both of them Natives of America; the Seeds of both Sorts I have received from Virginia and New England, where they grow wild in great Plenty in the Woods, and other shady Places, where the Ground is moist. They may be propagated by Seeds, or by parting their Roots, but the latter is generally practised in this Country, because they seldom perfect their Seeds here; but if the Seeds are procured from abroad, they should be sown the Beginning of March on a Border of light Earth; and if the Seeds should not come up the first Year, the Ground should not be disturbed, because they often remain a whole Year under Ground before the Plants appear, in which Case there is nothing more to be done, but to keep the Ground clear from Weeds, and wait until the Plants come up. When they appear, if the Season proves dry, they must be often watered, which will greatly forward their Growth, and where the Plants come up too close to each other, they should be thinned, and transplanted out into Beds a Foot asunder every Way, being careful to shade them until they have taken Root, as also to water them in dry Weather. In Autumn they may be transplanted where they are to remain, and the following Summer they will produce their Flowers, which will continue till the Frost prevents them, and their Roots will abide many Years, and afford many Offsets, by which they may be increased.

The best Season to transplant the old Roots, and to part them for Increase, is in October, when their Flowers are past, or the Beginning of March, just before they begin to shoot, but if the Spring should prove dry, they must be duly watered, otherwise they will not produce many Flowers the same Year; these Plants should not be removed oftener than every other Year, if they are expected to flower strong; they delight in a Soil rather moist than dry, provided it be not too strong, or holds the Wet in Winter; but if they are planted in a dry Soil, they must be often and plentifully watered in dry Weather, to make them produce Plenty of Flowers.

HELENIUM, Elecampane. See Inula.

HELIANTHEMUM. Tourn. Inst. R. H. 248. Tab. 128. Cistus. Lin. Gen. Pl. 598. Dwarf Cistus, or Sun Flower.

The Characters are,

The Flower has a 3 leaved Empalement, which is per-

manent, afterward covering the Seed Vessel. It hath 5 roundish Petals, which spread open, with a great Number of erect Stamina, terminated by small roundish Summits. In the Center is situated an oval Germen, supporting a single Style, the Length of the Stamina, crowned by an obtuse Stigma. The Germen becomes a roundish, or oval Capsule, of 1 Cell, opening in 3 Parts, filled with small roundish Seeds.

The Species are,

1. HELIANTHEMUM caulibus procumbentibus suffruticosis, foliis oblongis subpilosis, stipulis lanceolatis. Dwarf Cistus with trailing shrubby Stalks, oblong hairy Leaves, and Spear-shaped Stipulæ. *Helianthemum vulgare flore luteo*. J. B. 2. 15. Common Dwarf Cistus with a yellow Flower.

2. HELIANTHEMUM caulibus procumbentibus suffruticosis, ramossissimis, spicis florum longioribus. Dwarf Cistus with trailing shrubby Stalks full of Branches, and longer Spikes to the Flowers, *Helianthemum album Germanicum*. Tab. Icon. 1062. White German Dwarf Cistus.

3. HELIANTHEMUM caulibus suffruticosis pilosis, foliis lanceolatis obtusis, spicis reflexis. Dwarf Cistus with hairy shrubby Stalks, blunt Spear-shaped Leaves, and reflexed Spikes of Flowers. *Helianthemum foliis majoribus, flore albo*. J. B. 2. 16. Dwarf Cistus with larger Leaves and a white Flower.

4. HELIANTHEMUM incanum, caulibus suffruticosis erectis, foliis lanceolatis hirsutis. Hoary Dwarf Cistus with erect shrubby Stalks, and hairy Spear-shaped Leaves. *Helianthemum saxatile, foliis & caulibus incanis, floribus albis, Appenini Montis*. Mentz. Pug. Tab. 8. Rock Dwarf Cistus of the Apennines, with hoary Stalks and Leaves, and white Flowers.

5. HELIANTHEMUM caule procumbente non ramoso, foliis linearibus incanis oppositis. Dwarf Cistus with an unbranched trailing Stalk, and narrow hoary Leaves placed opposite. *Helianthemum folio thymi incano*. J. B. 2. 19. Dwarf Cistus with a hairy Thyme Leaf.

6. HELIANTHEMUM caule suffruticoso procumbente, foliis linearibus alternis, floribus auriculatis. Dwarf Cistus with a shrubby trailing Stalk, very narrow Leaves placed alternate, and auriculated Flowers. *Helianthemum tenuifolium glabrum luteo flore, perbumum sparsum*. J. B. 2. 18. Smooth narrow leaved Dwarf Cistus with a yellow Flower, and trailing Stalks.

7. HELIANTHEMUM caule suffruticoso procumbente, foliis lanceolatis oppositis, pedunculis longioribus, calycibus hirsutis. Dwarf Cistus with a shrubby trailing Stalk, Spear-shaped Leaves placed opposite, longer Foot Stalks to the Flowers, and hairy Empalements. *Helianthemum sive Cistus humilis, folio sampfuchi, capitulis valde hirsutis*. J. B. 2. 20. Dwarf Cistus with a Marjoram Leaf, and very hairy Heads.

8. HELIANTHEMUM caule suffruticoso procumbente, foliis linearibus oppositis, floribus umbellatis. Dwarf Cistus with a shrubby trailing Stalk, very narrow Leaves placed opposite, and Flowers growing in an Umbel. *Helianthemum folio thymi floribus umbellatis*. Tourn. Inst. 250. Dwarf Cistus with a Thyme Leaf and umbellated Flowers.

9. HELIANTHEMUM caulibus procumbentibus suffruticosis glabris, foliis ovato-lanceolatis oppositis, pedunculis longioribus. Dwarf Cistus with shrubby trailing Stalks,

which are smooth, oval Spear-shaped Leaves placed opposite, and longer Foot Stalks to the Flowers. *Helianthemum Germanicum luteum Cisti folio*. Boerb. Yellow German Dwarf *Cistus* with a Rock Rose Leaf.

10. *HELIANTHEMUM caule lignoso perenne, foliis radicalibus ovatis trinerviis tomentosis caulinis glabris lanceolatis alternis*. Perennial Dwarf *Cistus* with a woody Stalk, whose lower Leaves are oval, woolly, and three veined, and those on the Stalks smooth, Spear-shaped, and placed alternate. *Helianthemum plantaginis folio perenne*. Tourn. Inst. 250. Perennial Dwarf *Cistus* with a Plantain Leaf.

11. *HELIANTHEMUM caulibus sessilibus suffruticosis, foliis lanceolatis oppositis tomentosis caule florali racemoso*. Dwarf *Cistus* with very short shrubby Stalks, woolly Spear-shaped Leaves placed opposite, and a branching Flower Stalk. *Helianthemum foliis polii montani*. Tourn. Inst. 249. Dwarf *Cistus* with Leaves like Poley Mountain.

12. *HELIANTHEMUM caule suffruticoso procumbente, foliis ovatis nervosis, subtus incanis*. Dwarf *Cistus* with a shrubby trailing Stalk, and oval veined Leaves, white on their under Side. *Helianthemum ad nummulariam accedens*. J. B. 2. 20. Dwarf *Cistus* resembling Moneywort.

13. *HELIANTHEMUM caule suffruticoso, foliis linearilanceolatis oppositis subtus tomentosis*. Dwarf *Cistus* with a shrubby Stalk, and narrow Spear-shaped Leaves placed opposite, woolly on their under Side. *Helianthemum lavendulae folio*. Tourn. Inst. 249. Dwarf *Cistus* with a Lavender Leaf.

14. *HELIANTHEMUM caule suffruticoso erecto, foliis linearibus margine revolutis subtus incanis*. Dwarf *Cistus* with a shrubby erect Stalk, and narrow Leaves reflexed on their Edges, with their under Side hoary. *Helianthemum foliis Rosimarini splendentibus, subtus incanis*. Tourn. Inst. 250. Dwarf *Cistus* with shining Rosemary Leaves, hoary on their under Side.

15. *HELIANTHEMUM caulibus suffruticosis procumbentibus, foliis oblongo-ovatis subbirsutis, petalis acuminatis reflexis*. Dwarf *Cistus* with trailing shrubby Stalks, oblong oval hairy Leaves, and acute-pointed reflexed Petals to the Flowers. *Helianthemum vulgare petalis florum perangustis*. Hort. Elth. 177. Tab. 145. Common Dwarf *Cistus* with narrow Petals to the Flowers.

16. *HELIANTHEMUM caule suffruticoso erecto, foliis lanceolatis incanis glabris caule florali racemoso*. Dwarf *Cistus* with a shrubby upright Stalk, hoary Spear-shaped Leaves, which are smooth, and branching Flower Stalks. *Helianthemum Lusitanicum, mari folio incano, flore luteo*. Tourn. Inst. 250. Portugal Dwarf *Cistus* with a hoary Marum Leaf, and a yellow Flower.

17. *HELIANTHEMUM caule suffruticoso, foliis oblongo-ovatis oppositis, summis linearibus alternis*. Dwarf *Cistus* with a shrubby Stalk, oblong oval Leaves placed opposite, those toward the Top being narrow and alternate. *Helianthemum ampliore folio, flore roseo*. Sberard. At. Phil. N. 383. Dwarf *Cistus* with a larger Leaf, and Rose-coloured Flower.

18. *HELIANTHEMUM caule herbaceo birsuto, foliis lanceolato-linearibus pilosis, pedunculis longioribus*. Dwarf *Cistus* with an herbaceous Stalk, which is hairy, narrow Spear-shaped hairy Leaves, and longer Foot Stalks to

the Flowers. *Helianthemum flore maculoso*. Col. Cephr. 2. p. 78. Dwarf *Cistus* with a spotted Flower.

19. *HELIANTHEMUM caule herbaceo, foliis subovatis pilosis, flore fugaci*. Dwarf *Cistus* with an herbaceous Stalk, hairy oval Leaves, and a fugacious Flower. *Helianthemum annuum humile, foliis subovatis, flore fugaci*. Allion. Annual Dwarf *Cistus* with oval Leaves and a fugacious Flower.

20. *HELIANTHEMUM caule herbaceo erecto, foliis lanceolatis oppositis, floribus solitariis, capsulis maximis*. Dwarf *Cistus* with an erect herbaceous Stalk, Spear-shaped Leaves placed opposite, Flowers growing singly, and very large Capsules. *Helianthemum Ledi folio*. Tourn. Inst. 249. Dwarf *Cistus* with a Ledon Leaf.

21. *HELIANTHEMUM caule herbaceo ramofo, foliis oblongo-ovatis oppositis, summis alternis, floribus solitariis*. Dwarf *Cistus* with a branching herbaceous Stalk, oblong oval Leaves placed opposite; those toward the Top growing alternate, and solitary Flowers. *Helianthemum salicis folio*. Tourn. Inst. 249. Dwarf *Cistus* with a Willow Leaf.

22. *HELIANTHEMUM foliis fasciculatis*. Royen. Dwarf *Cistus* with Leaves growing in Bunches.

23. *HELIANTHEMUM caule fruticoso succulento, foliis ovatis carnosiss, floribus racemosis*. Dwarf *Cistus* with a shrubby succulent Stalk, oval fleshy Leaves, and branching Flowers. *Helianthemum frutescens portulacae folio*. Plum. Cat. Shrubby Dwarf *Cistus* with a Purslain Leaf.

24. *HELIANTHEMUM caule herbaceo procumbente, foliis ovatis tomentosis sessilibus*. Dwarf *Cistus* with an herbaceous trailing Stalk, and oval woolly Leaves sitting close to the Branches. *Helianthemum Alpinum, folio pilosella minoris Fuchsi*. J. B. 2. 18. Hoary Dwarf *Cistus* of the Alps, with lesser Cats Foot Leaves.

The 1st Sort grows naturally on the chalky Hills and Banks, in many Parts of England; the Stalks of this Plant are ligneous and slender, trailing on the Ground, extending themselves near a Foot each Way; these are garnished with small oblong Leaves, of a dark green on their upper Side, but of a grayish Colour on their under. The Flowers are produced at the End of the Stalks, in loose Spikes; they are composed of 5 deep yellow Petals, which spread open in the Day, but shut close in the Evening; these appear in June and July, and are succeeded by roundish Capsules, inclosing many angular Seeds, which ripen in August and September, and the Roots last several Years.

The 2d Sort grows naturally in Germany; the Stalks of this are much larger, and extend farther than those of the first; the Leaves are longer, and are hoary, there are 3 acuminate Stipulae at each of the lower Joints, which are erect. The Spikes of Flowers are much longer than those of the former, and the Flowers are white and larger. The Empalement of the Flowers are hairy and whitish; these Differences are lasting from Seeds.

The 3d Sort grows naturally in the South of France, in Italy, and Germany. The Stalks of this grow more erect than either of the former, and are more ligneous. The Joints are farther asunder; the Leaves are longer and hairy; the Spikes of Flowers are generally reflexed; they are white, and the Size of those of the second; the Stipulae of this are very narrow.

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The 4th Sort grows naturally on the *Apennine* Mountains; the Stalks are more erect than those of the third. The Leaves are not so long, the Stipulæ are very small, and the whole Plant is very hoary. The Flowers are white, and the Spikes shorter and more compact than either of the former.

The 5th Sort grows naturally in the South of *France*, in *Spain*, and *Istria*, from the last Country I have received the Seeds; this hath low trailing Stalks, which are ligneous, but seldom branch, and are not more than 4 or 5 Inches long. The leaves are narrow and hoary, and have no Stipulæ at their Base. The Flowers are white, and are in small Clusters at the End of the Stalks; this Sort seldom continues longer than 2 Years.

The 6th Sort hath trailing shrubby Stalks, which extend a Foot in Length, and are garnished with very narrow smooth Leaves placed alternate, but those short Stalks near the Root, which do not flower, have shorter and finer Leaves growing in Clusters; these have no Stipulæ at their Base. The Flowers are placed thinly toward the End of the Branches, they are yellow and auriculated; this Sort grows in the South of *France* and *Italy*.

The 7th Sort hath very long trailing ligneous Stalks, garnished with Spear-shaped Leaves, placed opposite, which are very hairy, and gray on their under Side, having at their Base 3 long narrow Stipulæ. The Spikes of Flowers are near a Foot in Length, but grow thinly, they are large, and of a deep yellow Colour, with very hairy Empalements; this grows naturally in the South of *France*, and *Spain*.

The 8th Sort hath very shrubby crooked Stalks, covered with a purplish brown Bark like the common Heath. The Branches are slender, and garnished with narrow stiff Leaves, like those of Thyme, which stand opposite, having no Stipulæ at their Base. The Flowers are produced on naked Foot Stalks, which terminate the Branches in a Sort of Umbel, they are of a pale yellow Colour, and a little smaller than those of the common Sort; this grows naturally on the Sands near *Fontainebleau* in *France*.

The 9th Sort grows naturally in *Germany*, from whence the Seeds were sent to the late Dr. *Boerhaave*, in whose curious Garden near *Leyden*, I gathered the Seeds; this sends out from a ligneous Root, a great Number of trailing Stalks, which extend more than a Foot each Way, and are smooth, with a dark brown Bark, garnished with oval Spear-shaped smooth Leaves, placed opposite, having at their Base 3 Spear-shaped Stipulæ. The Flowers are large, yellow, and grow in short Clusters at the End of the Branches; this always continues the same from Seeds.

The 10th Sort grows naturally in *Spain*, from whence I received it; this hath a short thick woody Stalk, from which come out several short Side Branches, garnished with oval woolly Leaves, having three longitudinal Veins. The Flower Stalk which arises from the main Stem, grows about 9 Inches high, having 2 or 3 narrow Leaves placed alternate. The Flowers are produced on pretty long Pedicles toward the Top of the Stalk, and have very smooth Empalements.

The 11th Sort was sent me from *Verona*, where it

grows naturally; this hath a low shrubby Stalk, from which come out a few short Branches, garnished with small woolly Spear-shaped Leaves, placed opposite. The Flower Stalk rises about 6 Inches high, and branches toward the Top, where the Flowers are produced on pretty long Foot Stalks; they are white, and smaller than those of the common Sort.

The 12th Sort hath long shrubby Stalks, which trail on the Ground, and divide into many Branches, garnished with oval veined Leaves of a light green on their upper Side, but grayish below, with three narrow erect Stipulæ at their Base. The Flowers are pretty large, white, and grow in Clusters at the End of the Branches.

The 13th Sort hath shrubby Stalks, which grow pretty upright, garnished with narrow Spear-shaped Leaves, placed opposite, woolly on their under Side, with 3 very narrow Stipulæ growing at their Base. The Flowers are white, growing in long Spikes at the End of the Branches; this grows naturally in the South of *France*.

The 14th Sort hath an erect shrubby Stalk, which sends out many Side Branches, whose Joints are pretty close; they are garnished with very narrow Leaves, placed opposite, whose Borders are reflexed; their upper Side is of a lucid green, and their under Side hoary. The Flowers are pretty large, white, and grow in small Clusters at the End of the Branches; this grows naturally in *Spain*, from whence the Seeds were sent me.

The 15th Sort was found by Mr. *Edmund Du Bois*, near *Croydon*, in *Surry*, and was at first supposed to be only an accidental Variety of the common Sort, but the Seeds always produce the same. I have cultivated it above 30 Years, and never have found it vary; it is very like the common Sort, but the Leaves are hairy. The Petals of the Flowers are Star-pointed, and smaller than those of the common Sort.

The 16th Sort hath upright shrubby Stalks, which rise a Foot and a half high, sending out Branches the whole Length, garnished with small Spear-shaped silvery Leaves, placed opposite, and smooth. The Flower Stalks branch, and the Flowers, which are white, are produced in short Spikes at the End of the Branches.

The 17th Sort was found growing naturally by the late Dr. *William Sberard*, near *Smyrna*, who sent the Seeds to *England*; this hath shrubby Stalks, which do not trail on the Ground, garnished with oblong oval Leaves placed opposite, but those toward the Top are narrow, and placed alternate. The Flowers are produced at the End of the Branches in long loose Spikes, they are of a Rose Colour, and the Size of those of the common Sort.

The 18th Sort is annual; this grows naturally in *France*, *Spain*, *Italy*, and in *Jersey*, where the late Dr. *William Sberard* found it, and sent the Seeds to *England*; this hath a branching herbaceous Stalk, which rises 4 or 5 Inches high, garnished with narrow Spear-shaped Leaves, placed opposite, which are covered with Hairs, those on the upper Part of the Stalks are placed alternate, and are narrower. The Flowers are produced in loose Spikes at the End of the Branches, standing on long Foot Stalks, they are small, and composed of 5 yellow

yellow Petals, with a dark purple Spot at the Base of each; these Flowers are very fugacious, for they open early in the Morning, and their Petals drop off in a few Hours after, so that by ten of the Clock the Flowers are all fallen.

The 19th Sort grows naturally on Mount *Baldus*, from whence the Seeds were sent me; this is an annual Plant, which sends out many herbaceous Stalks from the Root, garnished with oval Leaves which are hairy. The Flowers are produced in loose Spikes at the End of the Branches, they are of a pale yellow Colour, and very fugacious, seldom lasting two Hours before the Petals fall off; there is another Variety of this which grows about *Verona*, with upright Stalks.

The 20th Sort grows naturally in the South of *France* and *Italy*, and was found by the late Dr. *William Sherard*, growing near *Smyrna*, who sent the Seeds to *England* and *Holland* by a new Title, supposing it to be a different Plant, but when it was here cultivated, it proved to be the same with that growing in the South of *France*, for this Plant puts on different Appearances, according to the Soil and Situation where it grows; for, in a good Soil, where the Plants stand single, and are not injured by Weeds, they will rise near a Foot and a Half high, the Leaves will be two Inches and a Half long, and near half an Inch broad in the Middle; but in a poor Soil, or where the Plants stand too close, or are injured by Weeds, or neighbouring Plants, they do not rise more than half that Height. The Leaves are much narrower, and the Seed Vessels not half so large, so that any Person finding these Plants in two different Situations, may be deceived, and take them for different Species, but when they are cultivated in a Garden in the same Soil and Situation, they do not differ in any Particular. This is an annual Plant, which perishes soon after the Seeds are ripe.

The 21st Sort is an annual Plant, which grows naturally in *Spain* and *Portugal*; this hath branching Stalks, which rise a Foot high, garnished with oval oblong Leaves, placed opposite on the lower Part of the Stalk, but on the upper Part they are alternate and narrow, a single Leaf being placed between each Flower, which occasions the Title of Solitary Flowers, for they grow in loose Spikes at the End of the Branches, in the same Manner as the other Species.

The 22d Sort was sent me by Dr. *Adrian Van Royen*, who received the Seeds from the *Cape of Good Hope*, This rises with a shrubby Stalk about 9 Inches high, garnished with very narrow fine Leaves, growing in Clusters; the Flowers come out from the Side and at the End of the Branches, standing on slender Foot Stalks; they are of a pale Straw Colour, and very fugacious, seldom continuing longer than two Hours before the Petals fall off. This seldom continues longer than two Years.

The 23d Sort was sent me from *Campeachy*. This hath a shrubby succulent Stalk, which rises near 3 Feet high, garnished with oval, fleshy, succulent Leaves, like those of Purslain, which are placed alternate; the Flower Stalks arise from the main Stem, are naked and near two Feet high, branching out on each Side in smaller Foot Stalks, which are again branched into many smaller, each sustaining a small Rose-coloured Flower.

The 24th Sort grows naturally about *Kendal* in *Westmoreland*, and in some Parts of *Lancashire*, upon rocky Situations. This hath trailing herbaceous Stalks, which seldom extend more than 3 or 4 Inches, garnished with oval Leaves, which are very woolly, and sit close to the Branches; the Flowers are produced at the upper Part of the Branches, they are white and small, so make no great Appearance.

All the perennial Sorts of Dwarf *Cistus* (except the twenty-third) are hardy, so will thrive in the open Air in *England*; they are propagated by Seeds, which may be sown in the Places where the Plants are to remain, and will require no other Care but to keep them clear from Weeds, and thin them where they are too close, always observing to leave those Sorts at a farther Distance, whose Stalks trail on the Ground, and grow to the greatest Length. These Plants will continue several Years, especially in a poor dry Soil, but in rich Ground or moist Situations, they seldom last long; but as they ripen Seeds in Plenty, so they may be easily repaired. They all flower about the same Time as the common Sort, and their Seeds ripen in Autumn.

The annual Sorts may be propagated with as great Facility, for if their Seeds are sown on a Bed of common Earth in *April*, the Plants will come up in *May*, and require no other Culture, but to thin them where too close, and keep them clear from Weeds. This will flower in *July*, and the Seeds ripen in the Autumn. The 22d Sort will thrive in the full Ground in the same Manner as the other, but unless the Summer proves favourable, the Seeds will not ripen: The Roots have stood through the Winter when the Season has proved mild, without any Shelter, and have flowered the following Summer.

The 23d Sort grows naturally in the warm Parts of *America*. Father *Plumier* discovered it first in some of the *French Islands*, and Dr. *Houfoun* found it growing plentifully about *Campeachy*. This Sort is propagated by Seeds which should be sown on a hot Bed in the Spring; and when the Plants are fit to remove, they should be each planted in a small Pot filled with light, sandy, undunged Earth, and plunged into a moderate hot Bed of Tanners Bark, and treated as other tender Plants from the same Country; in the Autumn they must be placed in a warm Stove, and the second Year the Plants will flower, but they have not as yet produced Seeds in *England*.

The 24th Sort requires a shady Situation, otherwise it will not thrive here.

HELIANTHUS. *Lin. Gen. Pl.* 877. *Corona folis.* *Tourn. Inst. R. H.* 489. *Tab.* 279. Sun Flower; in *French, Soleil.*

The Characters are,

It hath a compound radiated Flower, the Border or Rays being composed of female bulf Florets which are barren, and the Disk of hermaphrodite Florets, which are fruitful; these are contained in a common scaly Empalement, whose Scales are broad at their Base, pointed at their Ends, and expand. The hermaphrodite Florets are cylindrical, swelling at their Base, and cut at the Brim into 5 acute Segments, which spread open; these have 5 Stamina curved at Bottom, and as long as the Tube, terminated by tubulous Summits. The Germen, which is situated at the Bottom of

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of the Tube, supports a slender Style the Length of the Tube, crowned by a reflexed Stigma divided in 2 Parts; the Germen, becomes an oblong blunt four cornered Seed. The femal half Florets, which compose the Border, are stretched out on one Side like a Tongue, which is long and entire; these have a Germen in the Bottom, but no Style or Stamina, and are not fruitful.

The Species are,

1. *HELIANTHUS foliis omnibus cordatis, nervis pòne basin unitis, extrorsum denudatis.* Lin. Sp. Pl. 904. Sun Flower whose Leaves are all Heart-shaped, Veins uniting behind at the Base, but toward the Border naked. *Corona solis.* Tabern. Icon. 763. *Helenium Indicum maximum.* C. B. P. 276. Greatest Indian Sun Flower, commonly called annual Sun Flower.

2. *HELIANTHUS foliis inferioribus cordatis, nervis pòne basin unitis denudatis, superioribus ovatis.* Lin. Sp. Pl. 905. Sun Flower whose under Leaves are Heart-shaped, Veins united behind at their Base, and the upper Leaves oval. *Corona solis minor sœmina.* Tabern. Icon. 764. Lesser female Sun Flower, commonly called perennial Sun Flower.

3. *HELIANTHUS foliis ovato-cordatis, nervis intra folium unitis.* Lin. Sp. Pl. 905. Sun Flower with oval Heart-shaped Leaves, whose Nerves unite in the Leaf. *Corona solis parvo flore tuberosâ radice.* Tourn. Inst. 489. Sun Flower with a small Flower and a tuberous Root, commonly called Jerusalem Artichoke; in French, *Taupinambours.*

4. *HELIANTHUS radice fusci formi.* Hort. Cliff. 420. Sun Flower with a Spindle-shaped Root. *Corona solis latifolia altissima.* Tourn. Inst. 489. Tallest broad-leaved Sun Flower.

5. *HELIANTHUS foliis lanceolatis scabris, caule striato, infernè glabro.* Lin. Sp. Pl. 905. Sun Flower with rough Spear-shaped Leaves, a slender Stalk, smooth toward the Bottom. *Chrysanthemum Virginianum altissimum angustifolium puniceis caulibus.* Mor. Hist. 3. p. 24. Tallest Virginia *Chrysanthemum*, with a narrow Leaf and purple Stalks.

6. *HELIANTHUS foliis oppositis sessilibus ovato-oblongis trinerviis, paniculâ dichotomâ.* Lin. Sp. Pl. 906. Sun Flower with oblong, opposite, oval Leaves, having three Veins, and sitting close to the Stalk, and a dichotomous Panicle. *Chrysanthemum Virginianum repens, foliis asperis binatim sessilibus acuminatis.* Mor. Hist. 3. p. 22. Creeping Virginia *Chrysanthemum*, with rough pointed Leaves, sitting close by Pairs.

7. *HELIANTHUS foliis lanceolatis oppositis, supernè scabris, infernè trinerviis, caule dichotomo ramoso.* Sun Flower with Spear-shaped Leaves placed opposite, whose upper Surface is rough, the under having three Veins, and a divided Stalk. *Corona solis trachelii folio, radice repente.* Tourn. Inst. 490. Sun Flower with a Throatwort Leaf, and a creeping Root.

8. *HELIANTHUS caule ramosissimo, foliis lanceolatis scabris, inferioribus oppositis, summis alternis petiolatis, calycibus foliosis.* Sun Flower with a very branching Stalk, rough Spear-shaped Leaves placed opposite at Bottom, but alternate toward the Top, having Foot Stalks, and leafy Empalements. *Corona solis trachelii folio tenuiore, calyce floris foliato.* Att. Phil. N° 412. Sun Flower with a narrow Throatwort Leaf, and a leafy Flower Cup.

9. *HELIANTHUS foliis ovatis crenatis trinerviis scabris, squamis calycinis erectis longitudine disci.* Flor. Virg. 103. Sun Flower with oval, rough, crenated Leaves, having 3 Nerves, the Scales of the Empalement being erect, and as long as the Disk of the Flower. *Corona solis Caroliniana, parvis floribus, folio trinervi amplo aspero, pediculo alato.* Martyn. Cent. 1. 20. Carolina Sun Flower, with small Flowers, large rough Leaves having three Veins, and a winged Foot Stalk.

10. *HELIANTHUS caule infernè lævi, foliis lanceolato-cordatis, radiis decapetalis.* Lin. Sp. Pl. 905. Sun Flower, with a Stalk smooth on the upper Side, Heart Spear-shaped Leaves, and 10 Petals in the Rays.

All these Species of Sun Flowers are Natives of America, from whence we are often supplied with new Kinds; and it is very remarkable, that there is not a single Species of this Genus that is European; so that before America was discovered, we were wholly unacquainted with these Plants. But although they are not originally of our own Growth, yet are they become so familiar with our Climate, as to thrive and increase full as well as if they were in their native Country (some of the very late flowering Kinds excepted, which require a longer Summer than we generally enjoy, to bring them to Perfection;) and many of them are now so plentiful in England, that Persons unacquainted with the History of these Plants, would imagine them at least to have been Inhabitants of this Island many hundred Years; particularly the Jerusalem Artichoke, which, though it doth not produce Seeds in our Climate, yet doth so multiply by its knobbed Roots, that, when once well fixed in a Garden, it is not easily to be rooted out.

The first Sort is annual, and so well known as to require no Description. There are single and double Flowers of two different Colours, one of a deep yellow, and the other of a Sulphur Colour; but these vary, so are not worthy to be mentioned as different. They are easily propagated by Seeds, which should be sown in March, on a Bed of common Earth; and when the Plants come up, they must be thinned where too close, and kept clean from Weeds; when the Plants are grown 6 Inches high, they may be taken up with Balls of Earth to their Roots, and planted into the large Borders of the Pleasure Garden, observing to water them till they have taken new Root, after which they will require no other Care, but to keep them clear from Weeds.

In July the great Flowers on the Tops of the Stems will appear, among which, the best and most double Flowers of each Kind should be preserved for Seeds; for those which flower later upon the Side Branches are neither so fair, nor do they perfect their Seeds so well, as those which are first in flower: When the Flowers are quite faded and the Seeds are formed, you should carefully guard the Heads from the Sparrows, which will otherwise devour most of the good Seeds; and about the Beginning of October, when the Seeds are ripe, you should cut off the Heads with a small Part of the Stem, and hang them up in a dry airy Place for about a Month, by which Time the Seeds will be perfectly dry and hard; when you may easily rub them out, and put them up in Bags or Papers, preserving them from Vermin until the Season for sowing them.

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The Seeds of this Sort of Sun Flower are excellent Food for domestic Poultry, therefore where a Quantity of it can be saved, it will be of great Use, where there are Quantities of these Fowls.

The other perennial Sorts rarely produce Seeds in England, but most of them increase very fast at their Roots, especially the creeping rooted Kinds, which spread too far for small Gardens. The 2d Sort, which is the most common in the English Gardens, is the largest and most valuable Flower, and is a very proper Furniture for large Borders in great Gardens, as also for Bosquets of large growing Plants, or to intermix in small Quarters with Shrubs, or in Walks under Trees, where few other Plants will thrive; it is also a great Ornament to Gardens within the City, where it grows in Defiance of the Smoke, better than most other Plants; and for its long Continuance in flower, deserves a Place in most Gardens, for the Sake of its Flowers for Basons, &c. to adorn Halls and Chimnies in a Season when we are at a Loss for other Flowers. It begins flowering in July, and continues until October.

The 3d, 4th, 5th, 6th, and 7th Sorts, may also have a Place in some large Borders of the Garden, for the Variety of their Flowers; which, though not so fair as those of the common Sort, yet will add to the Diversity; and as many of them are late Flowerers, so we may continue the Succession of Flowers longer in the Season.

These Sorts are all of them very hardy, and will grow in almost any Soil or Situation; they are propagated by parting their Roots into small Heads, which in one Year's Time will spread and increase greatly. The best Season for this Work is in the Middle of October, soon after the Flowers are past, or very early in the Spring, that they may be well rooted before the Droughts come on; otherwise their Flowers will be few in Number, and not near so fair, and by this Means their Roots will be weak; but if they are planted in October, you will save the Trouble of watering them; their Roots being surely fixed before the dry Weather, they will need no other Trouble than to clear them from Weeds.

The Jerusalem Artichoke is propagated in many Gardens for the Roots, which are by some People as much esteemed as Potatoes; but they are more watery and flashy, and are very subject to trouble the Belly by their windy Quality, which hath brought them almost into Disuse.

These are propagated by planting the smaller Roots, or the larger ones cut into Pieces, observing to preserve a Bud to each separate Piece, either in the Spring or Autumn, allowing them a good Distance for their Roots will greatly multiply; the Autumn following, when their Stems decay, the Roots may be taken up for Use. These should be planted in some remote Corner of the Garden, for they are very unsightly while growing, and their Roots are apt to over-run whatever grows near them, not can they be easily destroyed when they are once well fixed in a Garden.

The other Species which have been ranged under this Genus by Tournefort and others, are now removed to the following Genera, under which Titles they may be found.

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Corona Solis. See { Coreopsis.
Helenium.
Rudbeckia.
Silphium.

HELICTERES. Lin. Gen. Pl. 913. *Ifora*. Plum. Nov. Gen. 34. Tab. 37. Screw Tree.

The Characters are,

The Flower has a coriaceous Empalement of 1 Leaf, which is narrow at Bottom, but spreads open at the Top, where it is indented in 5 Parts. The Flower hath 5 oblong equal Petals, longer than the Empalement to which they are fixed. It hath 10 short Stamina at the Base of the Germen, terminated by oblong Summits, and 5 Nectaria surrounding the Germen, which have the Appearance of Petals. The Style is very long, slender, and supports the Germen at the Top, which is roundish, and crowned by an acute Stigma. The Germen turns to a twisted spiral Fruit with one Cell, inclosing many Kidney-shaped Seeds.

The Species are,

1. HELICTERES foliis cordato-ovatis serratis, subtus tomentosis, fructu tereti contorto. *Helicteres* with oval Heart-shaped Leaves which are sawed and woolly on their under Side, and a taper twisted Fruit. *Ifora albae* foliis, fructu longiore & angustiore. Plum. Nov. Gen. 24. Screw Tree with Marshmallow Leaves, and a longer and narrower Fruit.

2. HELICTERES foliis cordatis acuminatis serratis, subtus tomentosis, fructu brevi contorto. *Helicteres* with Heart-shaped, pointed, sawed Leaves, woolly on their under Side, and a short twisted Fruit. *Ifora albae* foliis, fructu brevioris & crassioris. Plum. Nov. 34. Screw Tree with a Marshmallow Leaf, and a shorter and thicker Fruit.

3. HELICTERES caule arboreo villosa, foliis cordatis crenatis nervosis subtus tomentosis fructu ovato contorto villosissimo. *Helicteres* with a Tree-like hairy Stalk, Heart-shaped, nervous, crenated Leaves, woolly on their under Side, and an oval, twisted, very hairy Fruit. *Ifora albae* folio amplissimo, fructu crassissimo & villosa. Edit. prior. Screw Tree with a very large Marshmallow Leaf, and a very thick hairy Fruit.

The 1st Sort grows naturally in the Bahama Islands, from whence I received the Seeds. This rises with a shrubby Stalk 5 or 6 Feet high, sending out several lateral Branches, covered with a soft yellowish Down, and garnished with Heart-shaped Leaves 4 Inches long, and 2 and a Half broad, sawed on their Edges, and woolly on their under Side, standing on long Foot Stalks; at the upper Part of the Branches the Flowers come out opposite to the Leaves, on slender Foot Stalks which are jointed; these are composed of 5 oblong white Petals, and in the Center arises the Style, which is curved, and 3 Inches long, upon the Top of which is situated the Germen, crowned by an acute Stigma. The Germen afterwards turns to a taper Fruit 2 Inches and a Half long, composed of 5 Capsules, closely twisted over each other like a Screw; these are hairy, and have each one Cell, containing several Kidney-shaped Seeds.

The 2d Sort grows naturally in Jamaica, from whence the late Dr. Housloun sent me the Seeds. This rises with a shrubby Stalk 9 or 10 Feet high, sending out

out many lateral Branches, covered with a smooth brown Bark, and garnished with Heart-shaped Leaves, which end in acute Points, and are sawed on their Edges, a little woolly on their under Side; the Flowers are produced on the Side of the Branches, on shorter Foot Stalks than the former; they are composed of 5 Petals, and the Style in the Center, which is strait, upright, and not half so long as in the other; the Fruit is thicker, not an Inch long, but twisted in the same Manner.

The 3d Sort rises with a strong woody Stalk 12 or 14 Feet high, sending out many ligneous Branches, closely covered with hairy Down, and garnished with large Heart-shaped Leaves, crenated on their Edges, and having large Veins running from the Mid-rib to the Sides; they are of a light yellowish green, and a little woolly on their under Side: The Flowers are produced from the Side of the Branches, they are of a yellowish white Colour, and larger than those of the other Sorts. The Style is near 4 Inches long, curved like that of the first Sort; the Fruit is oval, about one Inch long, very thick at the Bottom, and closely covered with hairy Down. This Sort was sent me by Mr. Robert Millar, from Carthage.

These Plants are propagated by Seeds, which must be sown on a hot Bed in the Spring; and when the Plants are come up strong enough to remove, they should be each planted in a separate small Pot, filled with light Earth, and plunged into a moderate hot Bed of Tan, observing to shade them from the Sun till they have taken new Root; then they should be treated as other tender Plants from hot Countries, raising the Glasses every Day in Proportion to the Weather, that the Plants may enjoy fresh Air, which will strengthen them, and prevent their drawing up weak. In the Summer the Plants may remain under the Frames, if there is sufficient Height for them to grow; but in Autumn they must be plunged into the Tan Bed in the Stove, where they should always remain, being careful to shift them into larger Pots when they require it, and not to give them too much Wet in Winter; but in Summer they should have a large Share of Air in warm Weather, and require to be often refreshed with Water: The 2d Year from the Seeds these Plants have often flowered in the Chelsea Garden, and the Seeds have some Years ripened there, but the Plants will live several Years with proper Management.

HELIOCARPOS. Lin. Gen. Pl. 533. *Montia*. Houst. Gen. We have no Title in English for this Plant.

The Characters are,

The Flower hath 1 Petal which is tubulous at the Bottom, and cut into 5 Segments which expand. It hath an Empalement of 1 Leaf, which is cut into 5 Parts spreading open. In the Center is situated a roundish Germen, supporting 2 erect Styles, crowned by acute Stigmas which stand apart; these are attended by several Stamina, of the same Length with the Styles, terminated by narrow Twin Summits which are prostrate. The Germen becomes an oval compressed Capsule, about 3 Lines long and 2 broad, with a transverse Partition dividing it in 2 Cells, each containing a single roundish Seed ending in a Point; the Borders of the Capsule are set with Hairs, resembling Rays.

We know but one Species of this Plant, viz.

HELIOCARPOS. Hort. Cliff. 211. Tab. 16. This is the *Montia arborescens* *mori folio fructu racemoso*. Houst. Mss. Tree *Montia*, with a Mulberry Leaf and branching Fruit.

This Plant was discovered by the late Dr. Housloun, growing naturally about Old La Vera Cruz in New Spain, from whence he sent the Seeds to England, which succeeded in the Chelsea Garden, where the Plants have produced Flowers, and ripened Seeds several Years. It rises with a thick woody Stalk which is soft, from 15 to 18 Feet high, sending out several lateral Branches toward the Top, garnished with Heart-shaped Leaves full of Veins, sawed on their Edges and ending in acute Points; they have Foot Stalks 3 Inches long, which stand oblique to the Leaves, and are placed alternate; the Flowers are produced at the End of the Shoots, in branching Clusters; they are of a yellowish green, and are succeeded by flat compressed Seed Vessels of an oval Shape, whose Borders are closely set with Threads representing Rays, of a brownish Colour when ripe; these Capsules are divided into 2 Cells by an intermediate Partition, in each of these is lodged a single roundish Seed ending in a Point.

This Plant is propagated by Seeds, which must be sown on a hot Bed in the Spring; and when the Plants are fit to remove, they should be each planted in a separate small Pot filled with light Kitchen Garden Earth, and plunged into a hot Bed, treating them as other tender Plants, which will not bear the open Air in this Country at any Season of the Year; and while the Plants are young, they require to be plunged in the Tan Bed, but after they have acquired Strength, they will thrive in the dry Stove: In Winter they should have but little Water, and must be kept warm; but in Summer they should have Plenty of fresh Air in mild Weather; and must be frequently refreshed with Water. With this Management the Plants will flower the third Year, and produce good Seeds, but may be preserved several Years with proper Care.

I have sowed Seed of this Plant which had been kept 10 Years, and came up as well as if it had been sowed the former Year; though from the Appearance of the Seed, it seems as unlike to grow after the first Year as any which I know.

HELIOTROPIUM. Lin. Gen. Pl. 164. Tourn. Inst. R. H. 138. Tab. 57. Turnsole.

The Characters are,

The Empalement of the Flower is of 1 Leaf, tubulous at Bottom, but cut into 5 at the Brim. The Flower hath 1 Petal with a Tube the Length of the Empalement, spreading flat above, where it is cut into 5 Parts, which are alternately larger than the other; the Chaps of the Tube is closed, and hath 5 prominent Scales, joined in form of a Star. It hath 5 short Stamina within the Tube, terminated by small Summits, and 4 Germina at the Bottom of the Tube, with 1 slender Style, the Length of the Stamina, crowned by an indented Stigma. The Germina become so many Seeds, sitting in the Empalement.

The Species are,

1. HELIOTROPIUM foliis ovatis integerrimis tomentosis rugosis, spicis conjugatis. Hort. Upsal. 33. Heliotrope with oval, entire, woolly, rough Leaves, and conjugated

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gated Spikes. *Heliotropium majus* Dioscoridis. C. B. P. 253. The greater Turnsole of Dioscorides.

2. *HELIOTROPIUM foliis cordato-ovatis acutis scabrisculis, spicis solitariis, fructibus bifidis.* Flor. Zey. 70. *Heliotrope* with Heart-shaped oval Leaves pointed and rough, single Spikes of Flowers and bifid Seeds. *Heliotropium Americanum cæruleum, foliis bormini.* Acad. Reg. Sc. Blue American Turnsole, with Clary Leaves.

3. *HELIOTROPIUM foliis lanceolato-ovatis acuminatis rugosis, spicis solitariis gracilioribus alaribus & terminalibus.* *Heliotrope* with Spear-shaped oval Leaves, which end in acute Points and are rough, and slender single Spikes of Flowers proceeding from the Sides and Tops of the Stalks. *Heliotropium Americanum cæruleum, foliis bormini angustioribus.* H. L. Blue American Turnsole, with narrower Clary Leaves.

4. *HELIOTROPIUM foliis oblongo-ovatis integerrimis glabris subtus incanis, floribus capitatis alaribus, caule arborescente.* *Heliotrope* with oblong, oval, entire, smooth Leaves, hoary on their under Side, Flowers growing in Heads from the Wings of the Stalks, and a Tree-like Stalk. *Heliotropium arborescens, folio teucrii, flore albo in capitula densa congesto.* Boerb. Ind. Tree-like Turnsole, with a Germander Leaf, and white Flowers growing in thick short Heads.

5. *HELIOTROPIUM foliis ovatis crenatis oppositis, floribus capitatis alaribus dichotomis, caule arborescente.* *Heliotrope* with oval crenated Leaves placed opposite, Flowers growing in Heads from the Wings of the Stalks, which diverge, and a Tree-like Stalk. *Heliotropium Canariense arborescens, folio scorodoniae.* Hort. Amst. Canary Tree-like Turnsole, with a Wood Sage Leaf.

6. *HELIOTROPIUM foliis ovato-lanceolatis, spicis plurimis confertis, caule fruticoso.* *Heliotrope* with oval Spear-shaped Leaves, many Spikes of Flowers growing in Clusters, and a shrubby Stalk.

7. *HELIOTROPIUM foliis lanceolato-linearibus glabris ovatis, spicis conjugatis.* Hort. Cliff. 45. *Heliotrope* with narrow Spear-shaped smooth Leaves without Veins, and conjugated Spikes of Flowers. *Heliotropium Curassavicum, foliis lini umbilicati.* Par. Bat. Prod. *Heliotrope* of Curassao, with a Venus Navelwort Leaf.

8. *HELIOTROPIUM foliis lineari-lanceolatis obtusis tomentosis, floribus alaribus sessilibus, caule arboreo.* *Heliotrope* with narrow, obtuse, Spear-shaped, woolly Leaves, Flowers sitting close to the Side of the Branches, and a Tree-like Stalk. *Heliotropium arborescens, maritimum, tomentosum, gnaphalii Americani foliis.* Sloan. Cat. 93. Tree maritime woolly *Heliotrope*, with a Sea Cudweed Leaf.

9. *HELIOTROPIUM foliis lanceolatis sessilibus, spicis solitariis alaribus & terminalibus, caule fruticoso.* *Heliotrope* with Spear-shaped Leaves sitting close to the Branches, single Spikes of Flowers proceeding from the Sides and Tops of the Stalk, which is shrubby. *Heliotropium minus litbospermi foliis.* Smaller *Heliotrope* with Leaves like Gromwel.

10. *HELIOTROPIUM caule procumbente, foliis ovatis tomentosis integerrimis, spicis solitariis terminalibus.* *Heliotrope* with a trailing Stalk, oval, woolly, entire Leaves, and single Spikes of Flowers terminating the Branches. *Heliotropium Americanum jupinum & tomentosum, foliis*

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subrotundis. Hauff. Mss. Low American woolly *Heliotrope*, with roundish Leaves.

11. *HELIOTROPIUM foliis oblongo-ovatis tomentosis, spicis conjugatis terminalibus, caule fruticoso.* *Heliotrope* with oblong, oval, woolly Leaves, and double Spikes of Flowers terminating the Stalk, which is shrubby. *Heliotropium Americanum frutescens & tomentosum, foliis oblongis, floribus albis.* Hauff. Mss. Shrubby and woolly American *Heliotrope*, with oblong Leaves and white Flowers.

The 1st Sort grows naturally in the South of France, in Spain, Italy, and most of the warmer Countries in Europe. It is an annual Plant, which succeeds better from Seeds which scatter in the Autumn, or sown at that Season, than in the Spring; for when they are sown in the Spring, they seldom come up the same Year; but if the Plant is once obtained, and the Seeds suffered to shed, it will maintain itself without any Trouble, requiring no other Culture but to keep it clean from Weeds, and thin the Plants where they are too close.

This rises about 7 or 8 Inches high, dividing into 2 or three Branches, garnished with oval rough Leaves, 2 Inches long and 1 broad in the Middle, of a light green, standing on pretty long Foot Stalks alternately; the Flowers are produced at the End of the Branches in double Spikes, joined at the Bottom, about an Inch and a Half long, turning backward like a Scorpion's Tail. The Flowers are white, and appear in June and July; the Seeds ripen in the Autumn, soon after which the Plant decays.

The 2d Sort grows naturally in the West-Indies. This is annual, the Stalk rises a Foot and a Half, or 2 Feet high, branching out toward the Top; the Leaves are rough and hairy, standing on pretty long Foot Stalks; they are 2 Inches and a Half long, and 1 and a Half broad in the Middle, ending in acute Points; the Flowers are produced toward the End of the Branches in single Spikes 6 Inches long, turning backward at the Top like the other Species. The Flowers are blue, and appear in July and August, the Seeds ripen in September and October.

The 3d Sort grows naturally in the West-Indies. This is a smaller Plant than the former, seldom growing above a Foot high; the Leaves are 1 Inch and a Half long, and about half an Inch broad; the Spikes of Flowers are very slender, and not more than 2 Inches long; the Flowers are small, and of a light blue Colour. They appear at the same Time with the former, and the Seeds ripen in Autumn.

The Seeds of these two Sorts must be sown on a hot Bed in the Spring, and when the Plants come up, they must be transplanted on another hot Bed to bring them forward, treating them as the Balsamine, and other tender annual Plants; and in June they may be taken up with Balls of Earth, and planted in the Borders of the Flower Garden, where they will flower and produce ripe Seeds.

The 4th Sort rises with a shrubby Stalk 6 or 7 Feet high, the young Branches are closely covered with a white Down; and the Leaves on those are very hoary and entire, but those on the older Branches are greener, and some of them are notched on their Edges; at each

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Joint of the Stalks, come out two Branches opposite, garnished with small hoary Leaves placed opposite: These when bruised, emit a strong Odour, which to some Persons is very disagreeable, but others are pleased with it. These Plants rarely flower in *England*, for in near 40 Years which I have cultivated them, I have but once seen them in flower. The Flowers are white, collected in roundish Heads, which turn backward, and sit close to the Branches; the Leaves continue all the Year, for which the Plants are preserved in Green-houses, to add to the Variety in Winter.

The 5th Sort grows naturally in the *Canary Islands*. This rises with a woody Stalk 3 or 4 Feet high, dividing into many Branches, garnished with oval Leaves notched on their Edges, growing opposite on long Foot Stalks; they are hairy, and of an Ash Colour on their under Side; the Flowers are produced from the Side of the Branches on pretty long Foot Stalks, each sustaining 4 short roundish Spikes or Heads, which divide by Pairs, and spread from each other. The Flowers are white, and appear in *June* and *July*, but are not succeeded by Seeds in *England*. The Leaves of this Plant, when bruised, emit an agreeable Odour, for which it is by some Persons much esteemed; the Gardeners have given it the Title of *Madam Maintenon*, but for what Reason I know not.

The 2 last Sorts are too tender to live through the Winter in the open Air in this Country, so must be kept in a Green-house during that Season, but they only require to be screened from Frost, so may be placed with Myrtles, and the other hardy Green house Plants, where they may have a large Share of Air in mild Weather, and be treated the same Way; they are easily propagated by Cuttings during any of the Summer Months, which, if planted in a shady Border, and duly supplied with Water, will take Root in 5 or 6 Weeks, then they may be potted, and placed in a shady Situation till they have taken new Root, after which they may be treated as the old Plants.

The 6th Sort grows naturally in *Peru*, from whence the Seeds were sent by the younger *Jussieu*, to the Royal Garden at *Paris*, where the Plants produced Flowers and Seeds; and from the curious Garden of Duke *D'Ayen*, at *St. Germain*, I was supplied with some of the Seeds, which have succeeded in the *Chelsea* Garden, where the Plants have flowered and perfected their Seeds for some Years.

This rises with a shrubby Stalk, 4 or 5 Feet high, dividing into many small Branches, garnished with oval Spear-shaped rough Leaves, set on without Order, they are 3 Inches long, and 1 Inch and a half broad in the Middle, standing on short Foot Stalks, they are hairy, and greatly veined on their under Side, which is of an Ash Colour. The Flowers are produced at the End of the Branches in short reflexed Spikes, growing in Clusters. The Foot Stalks divide into 2 or 3, and these divide again into less, each sustaining a Spike of bluish Flowers, which have a strong sweet Odour. The Plants continue in flower great Part of the Year, and those Flowers which come out in Summer, are succeeded by ripe Seeds in Autumn.

It may be propagated either by Seeds or Cuttings. The Seeds should be sown on a moderate hot Bed in the Spring, and when the Plants are fit to remove, they

should be transplanted into small Pots filled with light Earth, and plunged into a hot Bed, where they should be shaded till they have taken new Root, then they should be inured to the open Air by Degrees, into which they should be removed in Summer, placing them in a sheltered Situation, and in Autumn they must be housed with other exotick Plants in a good Green-house, where they will flower great Part of Winter, so will make a good Appearance among the Orange Trees, and other Green-house Plants, with whose Culture this Plant will thrive. If the Cuttings of this Plant are put into Pots filled with light Earth, during any of the Summer Months, and plunged into a moderate hot Bed, they will take Root very freely, but these do not make so good Plants as those raised from Seeds.

The 7th Sort grows naturally on the Sea Shore in the *West Indies*; this is an annual Plant, whose Branches trail on the Ground, and grow a Foot long, they are garnished with narrow grayish Leaves, which are smooth. The Flowers are produced in double Spikes from the Side of their Branches, they are white and small, so make no great Appearance. It is propagated by Seeds, and requires the same Treatment as the second and third Sorts.

The 8th Sort rises with an upright woody Stalk, 6 or 7 Feet high, with a hoary Bark, full of Marks where the Leaves have grown; the upper Part of the Stalk divides into 2 or 3 strong woody Branches, which grow erect, and are very closely garnished with long, narrow, woolly Leaves, which stand on every Side the Branches without Order. The Flowers come out from the Side of the Stalks, to which they sit close, they are short and reflexed, like those of the other Species. The Flowers are purple, sitting in very woolly Empalements, which are divided into 5 Parts, which spread open; the whole Plant is very white and woolly, like the Sea Cudweed, so makes an odd Appearance when intermixed with other exotick Plants; this is propagated by Seeds, which must be procured from the Places where it naturally grows, for it never produces any in *Europe*; these Seeds should be sown in a Tub of Earth in the Country, for when the dried Seeds come over they seldom grow, and if they do, it is not before the Second Year; and from several Parcels of the Seeds which I have received from the *West Indies*, I have not raised more than 2 Plants, and these came up from Seeds which had been sown more than a Year, so that if the Seeds are sown as soon as they are ripe in a Tub of Earth, when they arrive in *England*, the Tub should be plunged into a hot Bed of Tanners Bark, which will bring up the Plants, and when these are fit to remove, they should be each planted in a separate small Pot filled with Earth, composed of Sand and light undunged Earth with a little Lime Rubbish well mixed together, then plunged into a hot Bed of Tanners Park, and shaded until they have taken new Root, after which they must be treated as other tender exotick Plants, always keeping them in the Tan Bed in the Stove, giving them but little Water, especially during the Winter Season.

The 9th Sort is a Native of the *West Indies*, where it grows plentifully on the Sea Shore; it rises with an upright shrubby Stalk, a Foot and a Half high, garnished with small Spear-shaped Leaves, scarce one Inch long,

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long, and one Third of an Inch broad in the Middle, ending in acute Points, sitting close to the Stalk, they are hoary on their under Side, but smooth above. The Flowers are produced in single slender Spikes, which come out from the Side, and at the Top of the Stalks, they are but little recurved, especially those on the Side, but those at Top are more bent, they are white, so make but little Appearance.

The 10th Sort was sent me from *Cartbagena*, in *New Spain*, where it grows naturally on the sandy Shores. This is an annual Plant, with trailing Stalks, which grow 6 or 7 Inches long, garnished with small oval Leaves, which are woolly and entire. The Flowers are produced at the End of the Branches, in single short Spikes, which are reflexed, they are small and white, so make little Appearance.

The 11th Sort was sent me by the late Dr. *Houfoun*, from *La Vera Cruz*, where he found it growing in Plenty; this rises with a shrubby Stalk, 3 Feet high, dividing into slender Branches, closely garnished with oblong, oval, woolly Leaves, placed without Order. The Flowers are produced at the End of the Branches in double Spikes, which are slender, short, and strait, not recurved as the other Species. The Flowers are small and white, and the Plant is perennial.

These three last mentioned are propagated by Seeds, but the Difficulty of getting them fresh from *America*, and the Uncertainty of their growing, unless they are sown Abroad, and brought over in Earth, has rendered them rare in *Europe*, and as they are Plants of little Beauty, so few Persons have taken the Trouble to procure them, besides, as they require a Stove to preserve them in this Country, and must have a peculiar Soil and Management like the 8th Sort, so, unless for Variety in Botanick Gardens, they are not worth cultivating here.

HELLEBORINE. See *Serapias* and *Limadorum*.

HELLEBOROIDES HYEMALIS. See *Helleborus*.

HELLEBORO RANUNCULUS. See *Trollius*.

HELLEBORUS. *Lin. Gen. Pl.* 622. *Tourn. Inst. R. H.* 271. *Tab.* 144. Black Hellebore, or *Christmas Flower*; in *French*, *Ellebore-Noire*.

The Characters are,

The Flower hath no Empalement; it hath 5 large roundish Petals, which are permanent, and many small Nectaria, placed circularly, each being of one Piece, with a narrow Tube at the Bottom, divided at the Brim into 2 Lips, the under being short and indented; it hath a great Number of Stamina, terminated by compressed erect Summits, and several Germina, which are compressed, supporting Awl-shaped Styles, crowned by thick Stigmas. The Germina turn to compressed Capsules, with 2 Keels, the lower being short, and the upper convex, which are filled with round Seeds adhering to the Seam.

The Species are,

1. HELLEBORUS caule multifloro folioso, foliis pedatis. *Lin. Sp. Pl.* 558. Hellebore with many Flowers on a Stalk, which are intermixed with Leaves, and ramose Leaves sitting on the Foot Stalk. *Helleborus niger fetidus*. C. B. P. Stinking Black Hellebore, Bears Foot, or Setterwort.

2. HELLEBORUS caule multifloro folioso, foliis digitatis. *Lin. Sp. Pl.* 558. Hellebore with many Flowers

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on a Stalk, which are intermixed with Leaves, and fingered Leaves. *Helleborus niger bortenensis, flore viridi*. C. B. P. Green flowered Black Hellebore, or Bears Foot.

3. HELLEBORUS scapo sub-unifloro sub-nudo, foliis pedatis. *Hort. Upsal.* 157. Hellebore with one Flower on a Stalk, which is naked, and Hand-shaped Leaves sitting on the Foot Stalk. *Helleborus niger, flore albo, etiam interdum valde rubente*. J. B. True Black Hellebore, or *Christmas Rose*.

4. HELLEBORUS caule multifloro, foliis ternatis integerrimis, Hellebore with many Flowers on a Stalk, and Leaves composed of three entire Lobes. *Helleborus niger trifolius*. *Hort. Farn.* Trifoliate Black Hellebore.

5. HELLEBORUS flore folio infidente. *Hort. Cliff.* 227. Hellebore with the Flower sitting upon the Leaf. This is the *Aconitum byemele*, or Winter Aconite.

6. HELLEBORUS caule multifloro folioso, foliis digitatis serratis amplioribus. Hellebore with many Flowers on a Stalk, intermixed with Leaves, and large fingered Leaves, which are sawed. *Helleborus niger amplioribus foliis*. *Tourn. Inst. R. H.* 272. Black Hellebore with larger Leaves.

The 1st Sort grows naturally in Woods, in several Parts of *England*, but particularly in *Suffex*, where I have seen it in great Plenty; this hath a jointed herbaceous Stalk, which rises near 2 Feet high, dividing into 2 or 3 Heads, garnished with Leaves composed of 8 or 9 long narrow Lobes, which join at their Base; 4 of these on each Side are joined together at their Tails, and the Middle one stands on the Center of the Foot Stalk; these are sawed on their Edges, and end in acute Points; those on the lower Part of the Stalk are much larger than the upper which are small and narrow. The Flower Stalk arises from the Center of the Plant, dividing into many Branches each sustaining several smaller Foot Stalks, with 1 entire Spear-shaped Leaf upon each, and 1 large greenish Flower at the Top with purplish Rims; these appear in Winter, and the Seeds ripen in the Spring, which if permitted to scatter, the plants will rise without Care, and may be transplanted into Woods, or in Wilderness Quarters, where they will grow in great Shade, and make a good Appearance at a Season when there are but few Plants in Beauty.

The 2d Sort grows naturally at *Ditton*, near *Cambridge*, and in the Woods near *Stoken Church*, in *Oxfordshire*. The Stalks of this Sort grow more upright than those of the first, and do not branch so much. The Leaves are composed of 9 long Lobes, which unite to the Foot Stalk at their Base, and are sharply sawed on their Edges, they are of a lighter green than those of the first Sort. The Flowers are produced at the Top of the Stalk, having 1 or 2 Leaves set on the Foot Stalk, they are composed of 5 oval green Petals, with a great Number of Stamina surrounding the Germen in the Middle; these appear the Beginning of *February*, and the Seeds ripen the End of *May*, which if sown soon after they are ripe, the Plants will come up early the following Spring, and, when they have obtained Strength, may be planted in shady Places under Trees, where they will thrive and flower very well. The Leaves of this Sort decay in Autumn, and new ones arise from the Roots in the Spring, but the first Sort is always green. The

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The 3d Sort is supposed to be the Hellebore of the Antients; this grows naturally on the *Alps* and *Apen-nine* Mountains. The Root of this Sort is composed of many thick fleshy Fibres, which spread far into the Ground, from which arise the Flowers upon naked Foot Stalks, immediately from the Root, each supporting one large white Flower, composed of 5 roundish Petals, with a great Number of Stamina in the Middle. The Leaves of this are composed of 7 or 8 thick fleshy obtuse Lobes, slightly sawed on their Edges, which unite with the Foot Stalk at their Base; this Plant flowers in Winter, from whence the Title of *Christmas* Rose was applied to it; this is propagated by parting the Roots in Autumn, for the Seeds seldom ripen well in *England*; it should have a warmer Situation than either of the former, otherwise it will not flower well.

The 4th Sort is like the 2d, but differs from it in having trifoliate Leaves, which are broader; this flowers early in Winter, and the Stalks rise higher than either of the former Sorts, but is at present rare in *England*.

The 5th Sort is the common Winter *Aconite*, so well known as to need no Description. It flowers very early in the Spring, which renders it worthy of a Place in all curious Gardens, especially as it requires but little Room; this is propagated by Offsets, which the Roots send out in Plenty; these Roots may be taken up and transplanted, any Time after their Leaves decay, which is generally by the Beginning of *June*, till *October*, when they will begin to put out new Fibres, but as the Roots are small, and nearly the Colour of the Ground, so, if Care is not taken to search them, many of the Roots will be left in the Ground; these Roots should be planted in small Clusters, otherwise they will not make a good Appearance; for single Flowers scattered about the Borders of these small Kinds, are scarce seen at a Distance, but when these and the *Snowdrops* are alternately planted in Bunches, they will have a good Effect, as they flower at the same Time, and are much of a Size.

The 6th Sort is like the first, but the Lobes of the Leaves are broader, and the Stalks grow taller; this grows naturally in *Istria* and *Dalmatia*, from whence I received some of the Seeds; it has been supposed to be only a femal Variety of the first, and as such I sowed the Seeds, but the Plants had a very great Difference, and the first Winter proving severe, they were all destroyed, so that it is not so hardy as our common Sort, and depending on their being so, occasioned the Loss of the Plants.

HELLEBORUS flore globoso. See *Trollius*.

HELLEBORUS ALBUS. See *Veratrum*.

HELMET FLOWER, or MONK'S HOOD. See *Aconitum*.

HEMEROCALLIS. *Lin. Gen. Pl.* 391. *Lilio-Aphodelus*. *Tourn. Inst. R. H.* 344. *Tab.* 179. *Liliastrum*. *Tourn. Inst. R. H.* 369. *Tab.* 194. Lily *Aphodel*, or Day Lily; in *French*, *Lis de Saint Bruno*.

The Characters are,

The Flower has no Empalement; in some Species the Flower is of 1 Petal, cut into 6 Parts, in others it hath 6 Petals, with a short Tube, spreading open at the Top, which is reflexed. There are 6 Awl-shaped declining Sta-

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mina, surrounding the Style, terminated by oblong prostrate Summits. The roundish furrowed Germen is situated in the Middle, supporting a slender Style, crowned by an obtuse 3 cornered Stigma. The Germen becomes an oval 3 cornered Capsule with 3 Lobes, opening with 2 Valves, filled with roundish Seeds.

The Species are,

1. *HEMEROCALLIS scapo ramoso, corollis monopetalis*. *Hort. Upsal.* 88. Day Lily with a branching Stalk, and the Flower of 1 Petal. *Lilio-Aphodelus luteus*. *Park. Par.* 148. Yellow *Aphodel* Lily.

2. *HEMEROCALLIS scapo compresso corollis monopetalis campanulatis*. Day Lily with a compressed Stalk, and a Bell-shaped Flower of 1 Petal. *Lilio-Aphodelus luteus, minor*. *Tourn. Inst. R. H.* 344. Smaller yellow *Aphodel* Lily.

3. *HEMEROCALLIS scapo ramoso, corollis monopetalis flaminibus longioribus*. Day Lily with a branching Stalk, Flowers of 1 Petal and longer Stamina. *Lilio-Aphodelus phoenicius*. *Park. Par.* 148. *Aphodel* Lily with a reddish Flower.

4. *HEMEROCALLIS scapo simplici, corollis hexapetalis campanulatis*. *Hort. Cliff.* 128. Day Lily with an unbranched single Stalk, and Bell-shaped Flowers with 6 Petals. *Liliastrum Alpinum majus*. *Tourn. Inst. R. H.* 369. Greater Alpine Bastard Lily, called *Savoy Spiderwort*; and in *French*, *Lis de Saint Bruno*, i. e. *St. Bruno's* Lily.

The 1st Sort grows naturally in *Hungary*, *Dalmatia*, and *Istria*, but has long been an Inhabitant in the *English* Gardens; this hath strong fibrous Roots, to which hang Knobs, or Tubers, like those of *Aphodel*, from which come out keeled Leaves, a Foot and a Half long, with a rigid Mid-rib in the Middle, the 2 Sides drawing inward, so as to form a Sort of Gutter on the upper Side. The Flower Stalks rise a Foot and a Half high, having 2 or 3 longitudinal Furrows; these are naked, and at the Top divide into 3 or 4 short Foot Stalks, each sustaining 1 pretty large yellow Flower shaped like a Lily, having but 1 Petal, with a short Tube, spreading open at the Brim, where it is divided into 6 Parts; these have an agreeable Scent, from whence some have given it the Title of yellow *Tuberose*. It flowers in *June*, and the Seeds ripen in *August*; this Plant is easily propagated by Offsets, which the Roots send out in Plenty; these may be taken off in Autumn, that being the best Season for transplanting the Roots, and planted in any Situation, for they are extremely hardy, and will require no other Culture but to keep them clean from Weeds, and to allow them Room, that their Roots may spread; they may also be propagated by Seeds, which, if sown in Autumn, the Plants will come up the following Spring, and flower in 2 Years; but if the Seeds are not sown till Spring, the Plants will not come up till the Year after.

The 2d Sort grows naturally in *Siberia*; this hath Roots like those of the former Sort, but smaller. The Leaves are not near so long, nor more than half the Breadth of the former, and of a dark green Colour. The Flower Stalk rises a Foot and a Half high, is naked and compressed, but has no Furrows; at the Top is produced 2 or 3 yellow Flowers, nearer the Bell-shape than

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than those of the other Species, on shorter Foot Stalks; these flower the Beginning of June, and the Seeds ripen early in August. It is propagated by Offsets from the Root, or by Seeds as the former, but the Roots do not increase so fast; it should have a moist Soil, and a shady Situation, where it will thrive much better than in dry Ground.

The 3d Sort is a much larger Plant than either of the former, and the Roots spread and increase much more, therefore is not proper Furniture for small Gardens; the Roots of this hath very strong fleshy Fibres, to which hang large oblong Tubers. The Leaves are near 3 Feet long, hollowed like those of the former, turning back toward the Top. The Flower Stalks are as thick as a Man's Finger, and rise near 4 Feet high, they are naked, without Joints, and branching at the Top, where are several large Copper-coloured Flowers, shaped like those of the red Lily, and as large. The Stamina of this Sort are longer than those of the other, and their Summits are charged with a Copper-coloured Farina, which sheds on being touched, or if a Person smells to the Flowers, it will fly off and spread over the Face, dying it all over of a Copper Colour. The Flowers never continue longer than one Day, but there is a Succession of Flowers on the same Plants for a Fortnight or three Weeks; this Sort flowers about the same Time as the former, and the Roots propagate too fast for those Gardens, where there is but little Room. It will grow on any Soil, or in any Situation; the best Time to transplant the Roots is in Autumn.

The Savoy Spiderwort, or, as the French call it, St. Bruno's Lily, is a Plant of humbler Growth than either of the former; there are two Varieties of this, one is titled *Lilium Alpinum majus*, and the other *Lilium Alpinum minus* by Tournefort; the 1st of these rises with a Flower Stalk more than a Foot and a Half high. The Flowers are much larger, and there is a greater Number upon each Stalk, than the second; but as there is no other essential Difference between them, I have not put them down as different Species, but the first is by much the finer Plant, though not common in England, for the 2d Sort is what I have always observed in the Gardens here. I received some Roots of the 2d Sort from Monfr. Richard, Gardener to the King of France, which continue their Difference in the same Soil and Situation with the 1st, which flowers earlier in the Year; the Leaves of this Sort are somewhat like those of the Spiderwort, are pretty firm, and grow upright; the Flower Stalks grow about a Foot high, and have several white Flowers at the Top, shaped like those of the Lily, which hang on one Side, and have an agreeable Scent; these are but of short Duration, seldom continuing in Beauty above 3 or 4 Days, but when the Plants are strong, they will produce 8 or 10 Flowers upon each Stalk, so they make a good Appearance while they last.

These Sorts are usually propagated by parting the Roots; Autumn is the best Season for this Work, and also for transplanting the Roots, for when they are removed in the Spring, they seldom flower the same Year, or, if they do, it is but weakly; these Plants should not be transplanted oftener than every third Year, when the Roots may be parted to make an Increase of the Plants, but they should not be divided too small, for if they are,

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it will be 2 Years before they flower; these Plants delight in a light loamy Soil, and open Exposure, so must not be planted under the Drip of Trees; but if they are planted to an East Aspect, where they may be protected from the Sun in the Heat of the Day, they will continue in Beauty longer than when they are more exposed.

HEMIONITIS, Moonfern.

This is a Plant seldom propagated in Gardens, therefore I shall not trouble the Reader with any Account of it more than this, That whoever hath a mind to cultivate any of the Sorts, must procure the Plants from the Countries where they naturally grow; there are two Sorts Natives of the warmer Parts of Europe, but in America there is a great Number of very different Kinds; these must be planted in Pots filled with loamy undunged Earth, and such of them as are Natives of hot Countries, must be placed in the Stove, the others may be sheltered under a common Frame in Winter, and during the Summer they must be frequently watered, but in Winter they will require but little. In Summer they should also have Plenty of free Air admitted to them; with this Management the Plants will thrive.

HEPATICA. Boerb. Ind. Plant. *Ranunculus*. Tourn. Inst. R. H. 286. *Anemone*. Lin. Gen. Pl. 614. Hepatica, or Noble Liverwort.

The Characters are,

The Flower hath a 3 leaved Empalement. It hath 6 Petals, which are oval, and expand to the Bottom, with a great Number of slender Stamina, shorter than the Petals, terminated by obtuse Summits, and several Germina collected into a Head, supporting acuminate Styles, crowned by obtuse Stigmas. The Germina turn to acuminate Seeds fitting round the Styles.

The Varieties of this Plant are,

1. HEPATICA trifolia, caeruleo flore. Clus. The single blue Hepatica, or Noble Liverwort.
2. HEPATICA trifolia, flore caeruleo pleno. Clus. The double blue Hepatica, or Noble Liverwort.
3. HEPATICA trifolia, flore albo simplici. Boerb. Ind. The single white Hepatica, or Noble Liverwort.
4. HEPATICA trifolia, rubro flore. Clus. Single red Hepatica, or Noble Liverwort.
5. HEPATICA trifolia, flore rubro pleno. Boerb. Ind. Double red, or Peach-coloured Hepatica.

These Plants are some of the greatest Beauties of the Spring; their Flowers are produced in February and March in great Plenty, before the green Leaves appear, and make a very beautiful Figure in the Borders of the Pleasure Garden, especially the double Sorts, which commonly continue a Fortnight longer in flower than the single Kinds, and the Flowers are much fairer. I have seen the double white Kind often mentioned in Books, but could never see it growing, though I do not know but such a Flower might be obtained from Seeds of the single white, or blue Kinds. I have sometimes known the double blue Sort produce some Flowers in Autumn, which were inclining to white, and thereby some People have been deceived, who have procured the Roots at that Season, and planted them in their Gardens, but the Spring following their Flowers were blue, as before; and this is what frequently happens when the Autumn is so mild as to cause them to flower; but whether the double white Sort, mentioned in the Books, was

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only this accidental Alteration in the Colour of the Flower, I cannot say, though it seems very probable it was, since I never could hear of any Person who ever saw the double white Sort flower in the Spring.

The single Sorts produce Seeds every Year, whereby they are easily propagated, and also new Flowers may be that Way obtained. The best Season for sowing the Seeds is in the Beginning of *August*, either in Pots or Boxes of light Earth, which should be placed so as to have only the Morning Sun until *October*, when they should be removed into the full Sun, to remain during the Winter Season; but in *March*, when the young Plants will begin to appear, they must be removed again to a shady Situation, and in dry Weather should be frequently watered, and about the Beginning of *August* they will be fit to be transplanted; at which Time you should prepare a Border, facing the East, of good fresh loamy Earth, into which you should remove the Plants, placing them at about 6 Inches Distance each Way, closing the Earth pretty fast to their Roots, to prevent the Worms from drawing them out of the Ground, which they are very apt to do at that Season, and, in the Spring following, they will begin to shew their Flowers, but it will be 3 Years before they flower strong, and till then you cannot judge of their Goodness, when, if you find any double Flowers, or any of a different Colour from the common Sorts, they should be taken up, and transplanted into the Borders of the Flower Garden, where they should continue at least 2 Years before they are taken up, or parted, for it is remarkable in this Plant, that where they are often removed and parted, they are very subject to die, whereas, when they are permitted to remain undisturbed for many Years, they will thrive exceedingly, and become very large Roots.

The double Flowers, which never produce Seeds, are propagated by parting their Roots, which should be done in *March*, at the Time when they are in flower; but you should be careful not to separate them into very small Heads, nor should they be parted oftener than every 3d or 4th Year, if you intend to have them thrive, for the Reason before given. They delight in a strong loamy Soil, and in an Eastern Position, where they may have only the Morning Sun, though they will grow in almost any Aspect, and are never injured by Cold.

HEPATORIUM. See Eupatorium.

HEPTAPHYLLUM. See Potentilla.

HERACLEUM. See Sphondylium and Panax.

HERBA GERARDI. See Angelica sylvestris minor.

HERBA PARIS. See Paris.

HERBIFEROUS signifies bearing or bringing forth Herbs.

HERBIVOROUS, i. e. devouring or feeding on Herbs or Grass.

HERBOSE, grassy, or full of Grass or Herbs.

HERBULENT, grassy, full of Grass or Herbs.

HERMANNIA. *Tourn. Inst. R. H. 656. Tab. 432. Lin. Gen. Pl. 742.*

The Characters are,

The Flower hath a Pitcher-shaped permanent Empalement divided into 5 Parts at the Brim. It hath 5 Petals, which are narrow at their Base, and twist against the Sun within the tubulous Empalement, but spread open above, where they are broad and obtuse. It hath 5 broad Stamina,

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joined in one Body, terminated by pointed Summits, which are joined. In the Center is situated a roundish 5 cornered Germen, supporting an Awl-shaped Style, longer than the Stamina, crowned by a single Stigma. The Germen becomes a 5 cornered roundish Capsule with 5 Cells opening at the Top, inclosing many Seeds.

The Species are,

1. HERMANNIA foliis cuneiformibus plicatis, crenato-emarginatis. *Hort. Cliff. 342.* Hermannia with Wedge-shaped folded Leaves, crenated and indented. Hermannia frutescens, folio oblongo serrato latiori. *Boerb. Ind.* Shrubby Hermannia with a broader oblong serrated Leaf.

2. HERMANNIA foliis obovatis acutè incis, pedunculis bifloris. *Prod. Leyd. 347.* Hermannia with oval Leaves acutely cut, and Foot Stalks having 2 Flowers. Hermannia frutescens folio grossularia parvo hirsuto. *Boerb. Ind.* Shrubby Hermannia with a small hairy Gooseberry Leaf.

3. HERMANNIA foliis obovatis plicatis crenatis tomentosis. *Hort. Cliff. 343.* Hermannia with oval folded woolly Leaves, crenated. Hermannia frutescens, folio ibisci hirsuto molli, caule piloso. *Boerb. Ind.* Shrubby Hermannia with a soft hairy Marshmallow Leaf, and a woolly Stalk.

4. HERMANNIA foliis lanceolatis obtusis serratis. *Hort. Cliff. 342.* Hermannia with obtuse Spear-shaped Leaves, sawed. Hermannia frutescens, folio oblongo serrato. *Tourn.* Shrubby Hermannia with an oblong serrated Leaf.

5. HERMANNIA foliis oblongo-ovatis crenatis tomentosis flore mutabili. Hermannia with oblong, oval, crenated woolly Leaves, and a changeable Flower. Hermannia frutescens, folio oblongo molli cordato hirsuto. *Boerb. Ind.* Shrubby Hermannia with a soft, oblong, hairy, Heart-shaped Leaf.

6. HERMANNIA foliis pinnatifidis linearibus. *Hort. Cliff. 342.* Hermannia with narrow Leaves ending in many Points. Hermannia frutescens, folio multifido tenui, caule rubro. *Boerb. Ind. alt.* Shrubby Hermannia with a narrow multifid Leaf, and a red Stalk.

7. HERMANNIA foliis lanceolatis obtusis integerrimis. *Hort. Cliff. 342.* Hermannia with obtuse Spear-shaped Leaves, which are entire. Hermannia frutescens, folio lavendulae latiori & obtuso, flore parvo aureo. *Boerb. Ind. alt.* Shrubby Hermannia with a broad blunt Lavender Leaf, and a small golden Flower.

8. HERMANNIA foliis cordatis nervosis hirsutis, pedunculis bifloris. Hermannia with Heart-shaped, nervous, hairy Leaves, and two Flowers on each Foot Stalk.

9. HERMANNIA foliis simplicibus ternatisque hirsutis sessilibus. Hermannia with single and trifoliate Leaves, which are hairy, and sit close to the Stalk.

The 1st Sort rises with a shrubby Stalk, 3 or 4 Feet high, dividing into many irregular Branches, covered with a brown Bark, and garnished with Wedge-shaped Leaves, narrow at their Base, but broad and round at the Top, they are about an Inch long, and three Quarters broad at the Point, where they are indented and crenated. The Flowers are produced in short Spikes on the upper Part of the Branches, they are of a deep yellow Colour, but small; these appear in *April* and *May*, but are rarely succeeded by Seeds in *England*.

The 2d Sort is a Shrub about the same Height with the

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the first, but sends out a great Number of Branches, which spread wide on every Side, garnished with smaller Leaves than those of the former, which are rough, and sit close to the Branches. The Flowers are produced in short close Spikes at the End of every Shoot, so that the whole Shrub seems covered with Flowers, they are of a bright yellow, and appear toward the End of *April*, but are not succeeded by Seeds in *England*.

The 3d Sort is a Plant of humbler Growth than the former, seldom rising more than 2 Feet and a Half high; the Stem is not so woody, and the Branches are soft and slender; they are garnished with oval woolly Leaves plaited, and crenated on the Edges; the Flowers are produced in loose Panicles at the End of the Branches; they are larger than those of the other Species, and have very hairy Empalements. This Sort flowers in *June* and *July*, and frequently puts out more in the Autumn.

The 4th Sort has been longer in the *European* Gardens, than either of the other. This rises with a shrubby upright Stalk, 7 or 8 Feet high, sending out many ligneous Branches from the Side, which also grow more erect than any of the other; these are clothed with obtuse Spear-shaped Leaves, about an Inch and a Half long, and half an Inch broad, sawed on the Edges toward the End: The Flowers come out in small Bunches from the Side of the Stalk; they are of a pale Straw Colour, and appear in *May* and *June*; these are frequently succeeded by Seeds, which ripen the latter Part of *August*.

The 5th Sort seldom rises more than 2 Feet high, with a soft ligneous Stalk, sending out slender irregular Branches, garnished with oblong, oval, woolly Leaves, standing on pretty long Foot Stalks; the Flowers are produced in loose Spikes at the End of the Branches; these are at their first Appearance of a Gold Colour, but after they have been some Days open, they change to yellow. This flowers in *June* and *July*.

The 6th Sort rises with a shrubby Stalk near 3 Feet high, sending out many slender Branches, covered with a reddish Bark, and garnished with narrow Wing-pointed Leaves; the Flowers come out from the Side of the Branches in small Clusters, they are small, and of a deep yellow Colour. This flowers in *June* and *July*.

The 7th Sort hath shrubby branching Stalks, which are very bushy, but seldom rise more than a Foot and a Half high; the Branches are very slender, and are garnished with hairy pale green Leaves of different Sizes; some of them are near 2 Inches long, and 1 broad at their Ends, but their common Size is seldom more than 1 Inch long, and half an Inch broad at their Points; they are entire, and sit pretty close to the Branches; the Flowers come out from the Side of the Stalk singly, they are small, and of a deep yellow Colour. This Sort flowers most Part of Summer.

The 8th Sort I raised from Seeds, which I received from the *Cape of Good Hope*. This hath a shrubby, hairy, branching Stalk, about 2 Feet high, garnished with Heart-shaped hairy Leaves, standing on pretty long Foot Stalks; the Flowers are produced in loose Panicles at the End of the Branches, each Foot Stalk sustaining 2 large Gold-coloured Flowers, with large hairy Empalements. This Sort flowers most Part of Summer.

The 9th Sort I raised from Seeds, which came from the *Cape of Good Hope*. This rises with a shrubby hairy

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Stalk about 2 Feet high, sending out many Side Branches which grow more erect than those of the former, garnished with oblong, veined, hairy Leaves, which are sometimes single, and at other Times come out by Threes, the middle one being the largest; the Flowers are produced toward the End of the Branches, are large, and of a deep yellow Colour, with large swollen hairy Empalements. This Sort continues flowering most Part of Summer.

All the Species of this Genus yet known, are Natives of the Country about the *Cape of Good Hope*, from whence most of them were brought to the Gardens in *Holland*, where they have been propagated and spread through most Parts of *Europe*.

These Plants are all propagated by planting Cuttings of them during any of the Summer Months, in a Bed of fresh Earth, observing to water and shade them until they are well rooted, which will be in about 6 Weeks after planting; then you should take them up, preserving a Ball of Earth to their Roots, and plant them into Pots filled with light fresh Earth, placing them in a shady Situation until they have taken fresh Root; after which they may be exposed to the open Air, with Myrtles, Geraniums, &c. until the Middle or latter End of *October*, when they must be removed into the Green-house, observing to place them in the coolest Part of the House, and where they may have as much free Air as possible; for if they are too much drawn in the House, they will appear very faint and sickly, and seldom produce many Flowers; whereas, when they are only preserved from the Frost, and have a great Share of free Air, they will appear strong and healthy, and produce large Quantities of Flowers in *April* and *May*, during which Season they make a very handsome Appearance in the Green-house: They must also be frequently watered, new potted at least twice every Year, *i. e.* in *May* and *September*; otherwise their Roots will be so matted, as to prevent their Growth.

These Plants rarely produce good Seeds with us, except the 4th Sort, which ripens its Seeds every Year in *England*, which I suppose may be accounted for, by their having been long propagated from Cuttings; for those Plants which I have raised from Seeds, have been fruitful 2 or 3 Years, but I have always found those Plants which have been propagated by Cuttings taken from these, have soon become barren; the same Thing I have observed in many other Plants, therefore those who are desirous to continue their Plants fruitful, should constantly raise them from Seeds. These, as also those which are obtained from Abroad, must be sown on a moderate hot Bed; and when the Plants come up, they must be transplanted into small Pots, and plunged into another very moderate hot Bed, in order to promote their Rooting; after which they must be hardened by Degrees, to endure the open Air in Summer, and may then be treated as the old Plants.

HERMODACTYLUS, the *Hermodactyl*, commonly called Snakes-head Iris.

The Characters are,

It hath a Lily-shaped Flower, consisting of 1 Leaf, and shaped exactly like an Iris, but has a tuberous Root, divided into 2 or 3 Dugs, like oblong Bulbs.

We have but one Species of this Plant, *viz.*

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HERMODACTYLUS folio quadrangulo. C. B. P. Snakes-head Iris, vulgò. This is also called, *Iris tuberosa Belgarum, i. e. Tuberous Iris of the Dutch.*

This Plant is easily propagated by its Tubers, which should be taken off soon after the green Leaves decay, which is the proper Season for transplanting the Roots; but they should not be kept long out of the Ground, lest they shrink, which will cause them to rot when they are planted. They should have a loamy Soil, not too strong, and must be planted to an East Aspect, where they will flower very well. These Roots should not be removed oftener than once in three Years, if you design to increase them; but then they should be planted at a farther Distance from each other, than if they were to remain but one Year; and the Beds should be kept clear from Weeds, and at *Michaelmas* there should be some fine Earth laid over the Beds, which will greatly strengthen their Roots. The Distance which these Plants should be allowed is 6 Inches square, and they should be placed 4 Inches deep in the Ground. These produce their Flowers in *May*, and their Seeds are ripe in *August*; but as they multiply pretty fast by their Roots, few People are at the Trouble of raising them from Seeds; but those who have an Inclination so to do, must treat them in the Manner directed for the bulbous Irises.

The Roots of this Plant are very apt to run deep into the Ground, and then they seldom produce Flowers; and many Times they shoot so deep as to be lost, especially where the Soil is very light; therefore to prevent this, it will be proper to lay a Thickness of Rubbish under the Border where these are planted, to hinder them from getting down. This should always be practised in light Ground, but in strong Land there will be no Occasion to make Use of this Precaution, because they do not shoot downward so freely in that.

This Plant has by some Botanick Writers been supposed the true *Hermodytyl*; but what has been long used in *Enrope* for that, is the Root of a *Colchicum*.

HERNANDIA. Plum. Nov. Gen. 8. Tab. 40. Lin. Gen. Pl. 931. Jack-in-a-Box, vulgò.

The Characters are,

It hath male and female Flowers on the same Plant; the male Flowers have a partial Involucrum, composed of 4 oval small Leaves, which inclose 3 Flowers; each of these has a proper Bell-shaped Empalement of 1 Leaf; the Petal is Funnel-shaped, cut into 6 Parts at the Brim; it hath 3 short Stamina inserted in the Empalement, terminated by erect Summits. The female Flowers are shaped like the male, but want Stamina; they have a roundish Germen, supporting 3 slender Styles, crowned by acute Stigmas. The Empalement afterward becomes a large, swollen, oblong Fruit, perforated at each End, inclosing one hard globular Nut.

There is but one Species of this Genus, viz.

HERNANDIA. Hort. Cliff. 485. Tab. 13. This is the *Hernandia amplexifolia umbilicata. Plum. Hernandia* with a large umbilicated Ivy Leaf, commonly called in the *West-Indies*, Jack-in-a-Box.

This Plant is very common in *Jamaica*, *Barbadoes*, *St. Christophers*, and many other Places in the *West-Indies*, where it is known by the Name of Jack-in-a-Box. The Fruit of this Plant when ripe, is perforated, and the Nut in the Inside becomes hard; so that when the

Wind blows through the Fruit, it makes a whistling Noise, which may be heard at a Distance; from whence, I suppose, the Inhabitants gave this Name to the Plant. It grows in the Gullies, where there are Rills of Water.

In *Europe* this Plant is preserved in curious Gardens, with other tender exotick Plants. It is propagated by sowing the Seeds on a hot Bed in the Spring, and when the Plants have risen 2 Inches high, they should be transplanted each into a separate Pot, filled with fresh rich Earth, and plunged into the hot Bed again, observing to water and shade them until they have taken Root; after which Time they must have Air admitted to them (by raising the Glasses) in Proportion to the Warmth of the Air, or the Heat of the Bed in which they are placed; and they must be frequently watered, otherwise they will not thrive. As the Plants advance, they should be removed into larger Pots, which should be filled with rich Earth; but in doing this, you should be very careful not to break the Roots, as also to preserve a good Ball of Earth to them; they must also be frequently watered, and if their Leaves should hang after being removed, the Plants must be screened from the Sun until they have taken new Root. The best Time to shift these Plants is in *July*, that they may be well rooted before the Cold approaches, and the Plants must be constantly kept in the Bark Stove: In Winter they should have a moderate Share of Heat, and in the Summer they must have Plenty of Air in hot Weather. With this Management, the Plants will grow to the Height of 16 Feet or more, and the Leaves being very large, will make a beautiful Appearance in the Stove. It hath not as yet flowered in *England*, though we may expect some of the large Plants to flower in a short Time.

HERNIARIA. Tourn. Inst. R. H. 507. Tab. 288. Lin. Gen. Pl. 272. Rupturewort.

The Characters are,

The Flower hath no Petals, but a coloured Empalement of 1 Leaf, cut into 5 Parts which spread open. It hath 5 small Awl-shaped Stamina, situated in the Divisions of the Empalement, terminated by single Summits, and 5 others which are barren, placed alternately between them. In the Center is an oval Germen with 2 Stigmas, which have acute Points; the Germen turns to a small Capsule inclosed in the Empalement, having one oval pointed Seed.

The Species are,

1. *HERNIARIA glabra. J. B. 3. 378.* Smooth Rupturewort.
2. *HERNIARIA hirsuta. J. B. 3. 379.* Rough or hairy Rupturewort.
3. *HERNIARIA alba folio. Tourn. Inst. 507.* Rupturewort with a Chickweed Leaf.
4. *HERNIARIA fruticosa, viticulis lignosis. C. B. P. 382.* Shrubby Rupturewort, with woody Branches.
5. *HERNIARIA foliis ovatis lucidis, caule suffruticosa.* Rupturewort with oval shining Leaves, and an under Shrub Stalk. *Herniaria lucida aquatica. Sloan. Cat. Jam. 50.* Shining Rupturewort.

The 2 first Sorts grow naturally in *England*, but not very common; they are low trailing Plants, their Branches lying on the Ground, and extend 7 or 8 Inches each Way; they have Leaves like the smaller Chickweed, the first is smooth, and those of the second are hairy the Flowers come out in Clusters from the Side

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of the Stalks at the Joints, they are small and of a yellowish green, so make no Appearance.

The 4th Sort hath shrubby Stalks which trail on the Ground, garnished with small hairy Leaves like the second Sort, the Flowers are also very like that.

The 3d Sort is an annual Plant, which grows naturally in *France* and *Italy*. This doth not spread so much as either of the other Sorts, but the Flowers and Leaves are somewhat like the first, but larger.

The 5th Sort grows naturally in *Jamaica*, from whence the Seeds were sent me by the late Dr. *Houftoun*. This hath a shrubby trailing Stalk, dividing into many Branches, garnished with small shining Leaves; the Flowers come out from the Side of the Stalks, and are like those of the first Species. This Plant is tender, so must be raised in a hot Bed, and always kept warm, otherwise it will not thrive in this Country.

These Plants are seldom cultivated but in Botanick Gardens, for Variety. The 3 first are, for the most Part, annual Plants, seldom continuing longer than one Year; and must be permitted to shed their Seeds, whereby they are better preserved than if sown with Art. The 4th Sort is an abiding Plant, which may be propagated by Cuttings; but as they are Plants of no Beauty, they are rarely preserved in Gardens.

The 1st Sort is what should be used in the Shops, but is rarely seen in *London*, the Herb Women commonly bringing the Parsley Breakstone to the Markets, instead of this Plant.

HESPERIS. *Tourn. Inst. R. H.* 222. *Tab.* 108. *Lin. Gen. Pl.* 731. Dame's Violet, Rocket, or Queen's Gilliflower; in *French*, *Juliane*, or *Julienne*.

The Characters are,

The Flower is composed of 4 oblong Petals in Form of a Cross, whose Base or Tails are narrow, and situated in a 4 leaved Empalement, which falls away. It hath 6 Awl-shaped Stamina as long as the Tube of the Flower, 2 much shorter than the other, terminated by narrow erect Summits, reflexed at their Points. It hath a Honey Gland situated between the 2 short Stamina, and a 4 cornered Germen the Length of the Stamina, but no Style; the oblong erect Stigma sitting on the Germen, the Stigma is divided into 2 Parts, which join at their Points. The Germen becomes a plain long compressed Pod with 2 Cells, divided by an intermediate Partition, inclosing many oval compressed Seeds.

The Species are,

1. *HESPERIS caule simplici erecto, foliis lanceolatis denticulatis, petalis emarginatis*. Dame's Violet with a single erect Stalk, Spear-shaped indented Leaves, and the Petals of the Flower indented at the Top. *Hesperis bortenensis, flore purpureo*. *C. B. P.* 202. Garden Rocket with a purple Flower.

2. *HESPERIS caule simplici erecto, foliis ovato-lanceolatis integerrimis, petalis integris*. Dame's Violet with a single upright Stalk, oval Spear-shaped entire Leaves, and the Petals of the Flower entire. *Hesperis bortenensis flore candido*. *C. B. P.* 202. Garden Rocket with a white Flower.

3. *HESPERIS caule simplici erecto, foliis lanceolatis acutis serratis, petalis mucrone emarginatis*. Dame's Violet with a single upright Stalk, Spear-shaped, acute, sawed Leaves, and the Tips of the Petals indented. *Hesperis*

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syvestris inodora. *C. B. P.* 202. Unfavoury wild Rocket.

4. *HESPERIS caule bipido ramoso patente*. *Hort. Upsal.* 187. Dame's Violet, with a prickly, branching, spreading Stalk. *Hesperis montana, pallida, odoratissima*. *C. B. P.* 202. Sweetest pale Mountain Rocket.

5. *HESPERIS caule erecto, ramoso, hirsuto, foliis oblongo-cordatis, acutis sessilibus denticulatis, petalis integris*. Dame's Violet, with a hairy, erect, branching Stalk, oblong, Heart-shaped, pointed, indented Leaves, sitting close to the Stalk, and the Petals of the Flower entire.

6. *HESPERIS caule ramosissimo diffuso, foliis linearilanceolatis dentatis, siliquis apice truncatis* Dame's Violet with a very branching diffused Stalk, narrow Spear-shaped indented Leaves, and the Points of the Pods shaped like a Truncheon. *Hesperis exigua lutea, folio dentato angusto*. *Boerb. Ind.* 146. Rocket with a very small yellow Flower, and a narrow indented Leaf.

7. *HESPERIS foliis dentato-pinnatifidis, caule levi*. *Lin. Sp. Plant.* 664. Dame's Violet, with Wing-pointed indented Leaves, and a smooth Stalk. *Hesperis flore albo minimo, siliqua longa, folio profunde dentato*. *Boerb. Ind. alt.* 2. 20. Rocket with a small white Flower, a long Pod, and Leaves deeply indented.

8. *HESPERIS caule ramosissimo diffuso, foliis lanceolatis serratis scabris, siliquis sessilibus*. *Lin. Sp. Pl.* 663. Dame's Violet with very branching diffused Stalks, Spear-shaped, rough, sawed Leaves, and Pods sitting close to the Stalks. *Hesperis Africana, hieracii folio hirsuto, flore minimo purpurascens*. *Nissol. Afr.* African Rocket with a hairy Hawkweed Leaf, and a very little purplish Flower.

9. *HESPERIS caule erecto ramoso, foliis cordatis amplexicaulibus serratis villosis*. *Lin. Sp. Pl.* 664. Dame's Violet with an erect branching Stalk, and hairy, sawed, Heart-shaped Leaves embracing the Stalk. *Turritis annua verna, purpurascens flore*. *Tourn. Inst.* 224. Annual vernal Tower Mustard, with a purplish Flower.

10. *HESPERIS caule ramoso diffuso, siliquis teretibus*. *Hort. Upsal.* Dame's Violet with a diffused branching Stalk, and taper Pods. *Leucoium minus, lavenderae folio, obsoleto flore angustifolium*. *Bocc. Mus.* 2. 148. Lesser Stock Gilliflower with a Lavender Leaf, and a worn-out Flower.

The 1st Sort grows naturally in *Italy*; this was formerly in greater Plenty in the *English* Gardens than at present, having been long neglected because the Flowers were single, and made but little Appearance; however, as the Flowers have a very grateful Scent, the Plant is worthy of a Place in every good Garden. This rises with an upright Stalk a Foot and a Half high, garnished with Spear-shaped Leaves, which sit close to the Stalk; these are slightly indented on their Edges, and End in acute Points: The Flowers are produced in a loose Thyse on the Top of the Stalks, they are composed of 4 Petals roundish and indented at their Points; they are of a deep purple Colour and smell very sweet, especially in the Evening or inclement Weather. It flowers in *June*, and the Seeds ripen the latter End of *August*. It is a biennial Plant, so that young Plants should be raised every Year, to supply the Place of those which decay: If the Seeds are permitted to scatter, the Plants will

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come up without Trouble in the Spring; and if the Seeds are sown, the best Season for it is the Autumn; because those sown in Spring often fail if the Season proves dry, or will remain a long Time in the Ground before they vegetate. This Plant should have a loamy undunged Soil, in which it will thrive better than in rich Land.

There is a Variety of this with double Flowers, in some of the Gardens in *France*; but that which we have in *England*, is a Variety of the third Sort with unfavourable Flowers.

The 2d Sort has been generally supposed only a Variety of the first, differing in the Colour of the Flower, but is certainly a distinct Species; the Leaves are not so long, but much broader than those of the first, and their Borders are entire; the Flowers are not quite so large, nor do they form so good Spikes; they are white, and have not so fine a Scent as the first. This is also a biennial Plant, requiring the same Treatment as the first.

The 3d Sort grows naturally in *Hungary* and *Austria*. This rises with an upright Stalk near 2 Feet high, garnished with Spear-shaped Leaves, ending in acute Points, and sharply indented on their Edges; they are of a dark green, and sit close to the Stalks; the Flowers grow in loose Spikes on the Top of the Stalks, in some they are white, in others purple, and sometimes both Colours striped in the same Flower; these have no Odour, so are not deserving of a Place in Gardens, but may be propagated as the two former.

From this Sort, the double white and purple Rockets have been accidentally obtained, which are much esteemed for the Beauty of their Flowers; and if they had the agreeable Odour of the Garden Rocket, they would be some of the best Furniture for the Borders of the Flower Garden, but they are without Scent; however, for the Beauty of their Flowers, they are by some greatly esteemed, therefore I shall here insert the best Method of propagating them yet known.

These Plants are naturally biennial, so the Plants with single Flowers rarely survive the second Year; nor will those with double Flowers continue much longer, so that unless young Plants are annually raised to supply the Place of the old ones, there will soon be a Want of them, which is what few Persons are careful enough to observe, but thinking the Roots to be perennial, trust to their putting out Offsets, or the Plants remaining after they have flowered; and finding them decay, are apt to think their Soil very improper for them, and are at a Loss to account for their decaying; whereas, when the Plants have flowered, they have finished their Period, and seldom continue to flower a second Time from the same Root; though in poor Land, they will often put out a few weak Offsets, which may flower again, but seldom so strong as the principal Roots; therefore those who are desirous to propagate these Plants, should do it in the following Manner:

There should be some strong Roots of each Sort kept apart for this Purpose, which are not intended to flower; when these have shot up their Flower Stalks about 6 Inches high, they should be cut close to the Bottom; each of these may be divided in the Middle to make 2 Cuttings, which should be planted in a soft, gentle, loamy Soil, to an East Exposure, where they may have

only the Morning Sun; and these may be planted pretty near together, so as to be covered with Hand or Bell Glasses, which should be put over them, after the Cuttings have been well watered, and closely shut down, drawing the Earth round the Rim of the Glasses, to exclude the Air; then the Glasses should be shaded with Mats every Day when the Sun is hot, and if the Cuttings are gently refreshed with Water once in 7 or 8 Days, it will be sufficient, for too much Moisture will cause them to rot: When these are watered, the Glasses should be closely shut down again as before, with this Management the Cuttings will put out Roots in 3 Weeks, and will begin to shoot above; then the Glasses should be gently raised on one Side to admit the Air to them, and so gradually harden them to the open Air, to prevent their drawing up weak. When these have made good Roots, they should be carefully removed, and planted in an East Border at about 8 or 9 Inches asunder, observing to shade and water them until they have taken new Root; after which they will require no other Care, but to keep them clean from Weeds till the Autumn, when they may be transplanted into the Borders of the Pleasure Garden, where they are designed to flower.

The Roots thus cut down, will send up more Stalks than before, and when these are of a proper Height, they may be cut off and treated the same Way; so that if the Roots are sound, there may be 3 Crops of these Cuttings taken from them, and by so doing, the old Roots may be continued much longer than if they are permitted to flower, and by this Management there may be always a Supply of good Plants for the Flower Garden.

These Plants are very subject to canker and rot when they are planted in a light rich Soil, but in poor strong Ground, I have seen them thrive and flower in the utmost Perfection, where the Stems of Flowers have been as large, and the Flowers as fair as the finest double Stock-gilliflowers. Their Season of Flowering is in *June*, and I have frequently raised young Plants from the Stalks after the Flowers have decayed, by cutting them in Lengths, and planting them in the Manner before directed; but these seldom make so good Plants as the young Cuttings, nor are they so certain to grow, therefore the other are to be preferred.

The 4th Sort grows naturally in *Hungary*. This is much cultivated in the Gardens Abroad, for the great Fragrance of its Flowers, which in the Evening is so strong, as to perfume the Air to a great Distance, especially where there are any Number of the Plants. The Ladies in *Germany* are very fond of this Plant, and during the Season of their Flowering, have the Pots placed in their Apartments every Evening, that they may enjoy the Fragrance of their Flowers; for they have but little Beauty, being smaller than those of the Garden Rocket, and of a pale Colour, but the Scent of their Flowers is much preferable to them; though in the Day Time if the Weather is clear, they have very little Odour; but when the Sun leaves them, their Fragrance is expanded to a great Distance. To this Species it is supposed, that the Title of Dame's Violet was first applied.

This Sort is very rarely seen in the *English* Gardens: I suppose it has been neglected, because the Flowers make no Appearance. It is a biennial Plant, like the Garden Rocket, which is propagated by Seeds in the

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same Manner; but the Plants are not quite so hardy, and are very subject to rot in Winter, especially on a moist Soil, or in rich Land, where they are apt to grow very rank, so are soon injured by Wet and Cold in the Winter; therefore the Plants of this Sort should be planted in a dry poor Soil, and a warm Situation; and if some of them are planted in Pots to be placed under a common Frame in Winter, where they may be sheltered from hard Rains and Frost, but enjoy the free Air at all Times when the Weather is mild, it will be a sure Way to preserve them.

The Leaves of this Sort are much larger than those of the Garden Rocket, and of a paler green; the Stalks are closely set with bristly Hairs, the Flowers grow in loose Panicles at the Top of the Stalk, and appear about the same Time with the Garden Rocket.

The Seeds of the 5th Sort were sent me from Germany without any Title, nor any Account of the Country from whence it came; but as it was sent with the Seeds of some *Siberian* Plants, I suppose it came from the same Country. This is a biennial Plant, which rises with a strong branching Stalk between 2 and 3 Feet high, very hairy, garnished with oblong Heart-shaped Leaves, ending in acute Points, sitting close to the Stalk; they are 4 Inches long, and 1 and a Half broad at their Base, gradually diminishing to the Point, and slightly indented on their Edges; the upper Part of the Stalk divides into many Branches, garnished with small Leaves of the same Shape with those below, and terminated with loose Panicles of single large purple Flowers of great Fragrancy. This Sort flowered the End of June 1757, but the great Rains which fell in August, rotted the Plants before the Seeds were ripe.

The 6th Sort grows naturally in the warm Parts of Europe; this is annual, the Stalks rise about 8 or 9 Inches high, branching out greatly on every Side in a confused Order; they are garnished with small narrow indented Leaves, and are terminated by Clusters of small yellow Flowers, which make no Appearance.

The 7th Sort grows naturally in Sicily. This is an annual Plant, which seldom rises more than 6 Inches high; the Stalk branches toward the Top into 3 or 4 smaller, which are terminated by small white Flowers; the Leaves are 2 Inches long and 1 broad, cut almost to the Mid-rib on each Side, so as to resemble a winged Leaf.

The 8th Sort grows naturally in Africa. This is an annual Plant with a very branching Stalk, which rises about 9 Inches high, garnished with rough Spear-shaped Leaves sawed on their Edges, and terminated by loose Panicles of small purple Flowers, which appear in June and July; these are succeeded by long Pods sitting close to the Stalks, filled with small Seeds which ripen in September.

These 3 Sorts are rarely cultivated, except in Botanical Gardens, for Variety. If the Seeds of these are permitted to scatter, the Plants will come up without Care, and only require to be kept clean from Weeds; or they may be sown either in the Spring or the Autumn where they are to stand, for they do not bear transplanting well.

The 9th Sort is an annual Plant, which grows natu-

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rally in the South of France. This sends out several Heart-shaped Leaves from the Root, which spread on the Ground, and are sawed and hairy: The Stalk rises 9 Inches high, branching toward the Top, garnished with Leaves of the same Shape, which embrace the Stalks with their Base; the Flowers are produced in loose Panicles at the End of the Branches; they are of a lively purple Colour, and those Plants which rise in the Autumn, flower early in the Spring. If these Seeds are sown in Autumn, they succeed much better than in the Spring.

The 10th Sort is a Native of the same Country as the former, but it is a biennial Plant, which rises with a branching Stalk about a Foot high, garnished with narrow smooth Leaves, ending in acute Points, and indented on their Edges: The Flowers are produced toward the End of the Branches; they are small, and of a worn-out purple Colour, so make but little Appearance. It flowers in June, and the Seeds ripen in the Autumn. This is propagated by Seeds, as the first Sort.

HEUCHERA. Lin. Gen. Pl. 283. Sanicle.

The Characters are,

The Flower is composed of 5 narrow Petals, inserted in the Border of the 1 leaved Emplacement. It hath 5 erect Awl-shaped Stamina, much longer than the Emplacement, terminated by roundish Summits. It hath a roundish bifid Germen, with 2 erect Styles the Length of the Stamina, crowned by obtuse Stigmas. The Germen turns to an oval pointed Capsule with 2 Horns, reflexed, having 2 Cells filled with very small Seeds.

We have but one Species of this Genus, viz.

HEUCHERA. Hort. Cliff. 82. This is the *Mitella Americana*, flore squallida purpureo villosa. Boerb. Ind. alt. *Mitella of America*, with hairy Flowers, of a dirty purple Colour. Herman titles it *Cortusa Americana* flore squallida purpureo. Par. Bat. 131. American Sanicle with a dirty purple Flower.

This Plant grows naturally in Virginia, but is hardy enough to thrive in the open Air in England. It hath a perennial Root, which sends out many Heart-shaped oval Leaves, indented into 4 or 5 Lobes, crenated on their Edges, of a lucid green, and smooth, from between these come out the Foot Stalks of the Flower, which are naked, and rise a Foot high, dividing at Top into a loose Panicle, sustaining many small hairy Flowers, of an obsolete purple Colour. This flowers in May, and the Seeds ripen in August.

It is propagated by parting the Roots in Autumn and should be planted in a shady Situation; there is little Beauty in this Plant, but it is preserved in some Gardens for Variety.

HIBISCUS. Lin. Gen. Pl. 756. *Ketmia*. Tourn. Inst. R. H. 99. Tab. 26. Syrian Mallow.

The Characters are,

The Flower has a double Emplacement, which is permanent; the outer is composed of 8 or 10 narrow Leaves, the inner is shaped like a Cup, and is of 1 Leaf, cut at the Brim into 5 acute Points. It hath 5 Heart-shaped Petals, which join at their Base into one. It hath many Stamina, joined in Form of a Column, within the Tube of the Flower, but which expand toward the Top, and are terminated by Kidney-shaped Summits. It has a round Germen with slender

Slender Styles, longer than the Stamina, crowned by roundish Stigmas. The Germen turns to a Capsule with 5 Cells, opening in 5 Parts, inclosing Kidney-shaped Seeds.

The Species are,

1. *HIBISCUS foliis ovato-lanceolatis, supernè incisoferratis, caule arboreo.* Hort. Cliff. 350. Hibiscus with oval Spear-shaped Leaves, whose upper Parts are cut and sawed, and a Tree-like Stalk. *Ketmia Syrorum quibusdam.* C. B. P. 316. The Syrian *Ketmia*, commonly called *Althæa frutex*.
2. *HIBISCUS foliis cordato-quinquangularis obsolete serratis, caule arboreo.* Hort. Ups. 205. Hibiscus with Heart-shaped Leaves, having 5 Angles, bluntly sawed, and a Tree-like Stalk. *Ketmia sinensis, fructu subrotundo.* Tourn. Inst. R. H. 100. China *Ketmia* with a roundish Fruit, commonly called China Rose.
3. *HIBISCUS foliis subpeltato-cordatis septemangulatis, serratis bipidis.* Hort. Cliff. 349. Hibiscus with Heart-shaped Target Leaves, having 7 Angles, sawed, and set with prickly Hairs. *Ketmia Americana hirsuta, flore flavo, & semine moschato.* Tourn. Inst. R. H. 100. Hairy American *Ketmia* with a yellow Flower and musky Seed, commonly called Musk.
4. *HIBISCUS foliis palmato-digitatis quinquepartitis, laciniis supernè dentatis, caule lævi.* Hibiscus with fingered Leaves, which are divided into 5 Parts, indented toward the Top, and a smooth Stalk. *Ketmia Americana, folio Papaya, flore magno flavescente, fundo purpureo, fructu erecto pyramidalis hexagono, semine rotundulo sapore fatuo.* Boerb. Ind. alt. 1. 272. American *Ketmia* with a Papaw Leaf, and a large yellow Flower, having a purple Bottom, a pyramidal six cornered erect Fruit, and round Seeds of a flat Taste.
5. *HIBISCUS foliis cordatis angulatis serratis tomentosis, caule arboreo.* Hibiscus with angular Heart-shaped sawed woolly Leaves, and a Tree-like Stalk. *Malva arborea, folio oblongo acuminato veluto dentato & leviter sinuato, flore ex rubro flavescente.* Sloan. Cat. 95. Tree Mallow with oblong, acute-pointed, indented Leaves, slightly sinuated, and a reddish yellow Flower.
6. *HIBISCUS foliis cordatis integerrimis.* Flor. Zeyl. 258. Hibiscus with entire Heart-shaped Leaves. *Ketmia Indica tilia folio.* Tourn. Inst. R. H. 100. Indian *Ketmia* with a Lime Tree Leaf.
7. *HIBISCUS foliis ovatis acuminatis serratis glabris, caule arboreo.* Flor. Zeyl. 260. Hibiscus with oval, pointed, sawed, smooth Leaves, and a Tree-like Stalk. *Alcea Javanica arboreascens, flore pleno rubicundo.* Breyn. Cent. 121. Tab. 56. Tree Vervain Mallow of Java with a double red Flower.
8. *HIBISCUS foliis serratis, inferioribus ovatis indivisis, superioribus quinquepartitis, caule aculeato.* Hibiscus with sawed Leaves, the lower oval and undivided, the upper divided into 5 Parts, and a prickly Stalk. *Ketmia Indica vitis folio, magno flore.* Tourn. Inst. 100. Indian *Ketmia* with a Vine Leaf, and large Flower.
9. *HIBISCUS foliis serratis, inferioribus cordatis, mediis tripartitis, summis quinquepartitis, caule aculeato.* Hibiscus with sawed Leaves, the lower ones being Heart-shaped, the Middle divided into 3 Parts, the upper into 5, and a prickly Stalk. *Ketmia Aegyptiaca vitis folio, parvo flore.* Tourn. Inst. R. H. 100. Egyptian *Ketmia* with a Lime Tree Leaf and a small Flower.
10. *HIBISCUS foliis quinquelobatis serratis, caule glabro.* Hibiscus with sawed Leaves divided into 5 Lobes, and a smooth Stalk. *Ketmia Indica, Gossypii folio, acetosæ sapore.* Tourn. Inst. R. H. 100. Indian *Ketmia* with a Cotton Leaf, and the Taste of Sorrel.
11. *HIBISCUS foliis quinquefido-palmatis, caule aculeato.* Hort. Cliff. 498. Hibiscus with Hand shaped 5 pointed Leaves, and a prickly Stalk. *Ketmia Zeylanica, fici folio, perianthio oblongo integro.* Hort. Eltb. 190. Tab. 157. *Ketmia* of Ceylon with a Fig Leaf, and an oblong entire Perianthium.
12. *HIBISCUS foliis quinquepartitis, lobis ovato-lanceolatis hirsutis crenatis, caule spinosissimo.* Hibiscus with Leaves divided into 5 Lobes, which are oval, Spear-shaped, hairy, and crenated, and a very prickly Stalk. *Ketmia Indica aculeata, foliis digitatis.* Tourn. Inst. 101. Prickly Indian *Ketmia* with Hand-shaped Leaves.
13. *HIBISCUS foliis cordatis hirsutis crenatis, floribus lateralibus, caule arboreo ramoso.* Hibiscus with Heart-shaped, hairy, crenated Leaves, Flowers growing from the Sides of the Branches, and a Tree-like branching Stalk. *Ketmia Americana frutescens foliis subrotundis crenatis hirsutis, flore luteo.* Houß. Shrubby American *Ketmia* with roundish, hairy, crenated Leaves, and a yellow Flower.
14. *HIBISCUS foliis oblongo-cordatis glabris, denticulatis, subtus incanis, floribus amplissimis.* Hibiscus with oblong, Heart-shaped, smooth, indented Leaves, hoary on their under Side, and very large Flowers.
15. *HIBISCUS foliis quinque partito pedatis, calycibus inferioribus latere rumpentibus.* Lin. Sp. Plant. 696. Hibiscus with Leaves like a Hand, divided into 5 Parts, and the lower Empalement torn Sideways. *Ketmia Brasiliensis, folio ficis, fructu pyramidalato sukato.* Tourn. Inst. R. H. 100. *Ketmia* of the Brasils with a Fig Leaf, and a pyramidal furrowed Fruit.
16. *HIBISCUS foliis inferioribus cordatis angulatis, superioribus subbistatis, floribus subnutantibus, pistillo cernuo.* Lin. Sp. Plant. 697. Hibiscus with lower Leaves, Heart-shaped and angular, the upper ones somewhat Spear-shaped, nodding Flowers, and a recurved Pistil. *Ketmia palustris minor, folio angusto, flore parvo purpurascens, fructu depresso pentagono.* Zannichb. Venet. 155. Tab. 91. Smaller Marsh *Ketmia* with a narrow Leaf, a small purplish Flower, and a five-cornered depressed Fruit.
17. *HIBISCUS foliis ovatis acuminatis serratis, caule simplicissimo, petiolis floriferis.* Hort. Ups. 205. Hibiscus with oval pointed sawed Leaves, a single Stalk, and Foot Stalks having Flowers. *Ketmia Africana Populi folio.* Tourn. Inst. 100. African *Ketmia* with a Poplar Leaf.
18. *HIBISCUS caule herbaceo simplicissimo, foliis ovatis subtrilobis, subtus tomentosis, floribus axillaribus.* Lin. Sp. Pl. 693. Hibiscus with a single herbaceous Stalk, oval Leaves, having 3 Lobes, woolly on their under Side. *Ketmia palustris flore purpureo.* Tourn. Inst. 100. Marsh *Ketmia* with a purple Flower.
19. *HIBISCUS foliis tripartitis incis, calycibus inflatis.* Hort. Upsal. 206. Hibiscus with tripartite cut Leaves, and a swollen Empalement. *Ketmia vesicaria vulgaris.* Tourn. Inst. Common Bladder *Ketmia*, called Venice Mallow, or Flower of an Hour.
20. *HIBISCUS foliis tripartitis dentatis, lobis angustioribus*

ribus caule hirsuto calycibus inflatis. *Hibiscus* with tripartite indented Leaves, having narrower Lobes, a hairy Stalk, and swollen Empalements. *Ketmia vesicaria Africana*. Tourn. Inst. 101. African Bladder *Ketmia*.

21. *HIBISCUS foliis tripartitis, lobis linearibus pinnatodentatis calycibus inflatis.* *Hibiscus* with tripartite Leaves, having very narrow Lobes, indented and winged, and a swollen Empalement. *Ketmia Africana vesicaria, foliis profundius incisus vix crenatis.* Boerb. Ind. alt. African Bladder *Ketmia* with Leaves more deeply cut, and slightly crenated.

22. *HIBISCUS foliis inferioribus trilobis, summis, quinquepartitis obtusis crenatis calycibus inflatis, caule hispido.* *Hibiscus* with under Leaves, having 3 Lobes, the upper ones being cut into 5 obtuse Segments, which are crenated, swollen Empalements, and a prickly Stalk.

23. *HIBISCUS foliis cordatis-crenatis, angulis lateralibus extimis parvis, caule arboreo.* Hort. Cliff. 349. *Hibiscus* with Heart-shaped crenated Leaves, whose outward lateral Angles are small, and a Tree-like Stalk. *Malvaviscus arboreus, flore miniato clauso.* Hort. Elit. 210. Tab. 170. Tree-like viscous seeded Mallow, with a closed scarlet Flower.

24. *HIBISCUS foliis lanceolatis rigidis denticulatis, floribus alaribus, pedunculis longissimis, capsulis lignosis.* *Hibiscus* with stiff, Spear-shaped, indented Leaves, Flowers proceeding from the Wings of the Stalks, very long Foot Stalks, and woody Capsules. *Alcea floridana quinquecapsulari, laurinis foliis leviter crenatis, seminibus coniferarum instar alatis.* Pluk. Alm. Vervain Mallow of Florida with a five celled Capsule, Bay Leaves lightly crenated, and Seeds winged like those of the coniferous Tribe, commonly called Loblolly Bay in America.

The 1st Sort is commonly called *Althea frutex* by the Nursery Gardeners who propagate the Shrubs for Sale, of this there are 4 or 5 Varieties, which differ in the Colour of their Flowers; the most common hath pale purple Flowers with dark Bottoms, another hath bright purple Flowers with black Bottoms, a 3d hath white Flowers with purple Bottoms, a 4th variegated Flowers with dark Bottoms, and a 5th pale yellow Flowers with dark Bottoms, but the last is very rare at present in the English Gardens; there are also 2 with variegated Leaves, which are by some much esteemed.

This grows naturally in Syria, from whence it has been introduced to the Gardens, and is one of the great Ornaments of the Autumn Season to a Garden. It rises with a shrubby Stalk to the Height of 6 or 7 Feet, sending out many woody Branches, covered with a smooth gray Bark, and garnished with oval Spear-shaped Leaves, whose upper Parts are frequently divided into 3 Lobes, which are sawed; these are placed alternately on the Branches, standing on short Foot Stalks. The Flowers come out from the Wings of the Stalks at every Joint of the same Year's Shoot, they are large, and shaped like those of the Mallow, having 5 large roundish Petals, which join at their Base, and spread open at the Top, in Shape of an open Bell; these appear in August, and, if the Season is not too warm, there will be a Succession of Flowers Part of September; these are succeeded by short Capsules with 5 Cells filled with Kidney-shaped Seeds, but unless the Season proves warm, they will not ripen in this Country.

It is propagated by Seeds, which should be sown in Pots filled with light Earth the latter End of March, and if they are plunged into a gentle Heat, it will greatly forward the Growth of the Seeds. When the Plants are come up, they must be inured to the open Air, and in May the Pots may be plunged into the Ground, in a Border exposed to the East, where they may have the Morning Sun; the Reason of my advising the Pots to be plunged into the Ground, is to prevent the Earth from drying so fast as it would do when the Pots stand on the Surface, so that the Plants will not require so much Water in Summer; these Plants will require no other Culture, but to keep them clean from Weeds, and in very dry Weather to refresh them with Water during the first Summer, but in Autumn it will be proper to remove the Pots under a common Frame to screen them from the Frost, or where there is not such Conveniency, they may be plunged close to a Hedge, Pale, or Wall, to a good Aspect, and in severe Frost, they should be covered with Mats, Straw, or other light Covering; for although these Plants, when they have obtained Strength, will resist the Cold of our Winters, yet the young Plants, whose Shoots are tender, are very often injured by the first Frost of Autumn, so that if they are not screened the first Year, they are often killed to the Ground. Toward the latter End of March will be a good Time to transplant these Plants, at which Time a Spot of light Ground must be prepared to receive them, which should be divided into Beds 4 Feet broad, with Paths of 2 Feet broad between; then the Plants should be shaken out of the Pots with the Earth about them, and separated with Care, for their Roots are very tender, and apt to break with little Force; these should be planted at about 9 Inches asunder in the Beds, so that if 4 Rows are planted in each Bed, there will be 6 Inches allowed between the Outside Rows and the Paths. The Ground should be gently closed about the Roots to prevent the Air penetrating to their Roots, and if a little old Tanners Bark, or Mulch is laid over the Surface of the Beds, it will prevent the Earth from drying, and be of great Use to the Plants; during the following Summer they must be kept clean from Weeds, and if the following Winter should prove severe, it will be prudent to cover the Plants again in Autumn, especially if they shoot late in the Season, or the Autumn proves cold and moist, for then the Plants will be in great Danger of having their Tops killed; in these Beds the Plants may remain two Years, by which Time they will be fit to transplant where they are designed to remain, for if they are kept longer in the Nursery, they will not remove so well. The best Time for transplanting these Plants, is the End of March, or the Beginning of April, for they seldom begin to shoot till the End of April, or the Beginning of May; they should have a light Soil, not too wet, for in strong Land their Stems grow mossy, and they never thrive after.

These Plants may also be propagated by Cuttings, which, if planted the latter End of March, in Pots filled with light Earth, and plunged into a gentle Heat, will take Root, but the Plants so raised are not so good as the Seedlings. The several Varieties may be propagated by grafting upon each other, which is the common

mon Method of propagating the Sorts with striped Leaves.

The 2d Sort grows naturally in *India*, from whence the *French* first carried the Seeds to their Settlements in the *West Indies*, and the Inhabitants of the *British* Colonies there have been supplied with the Seeds from them, so have given it the Title of *Martinico Rose*; of this there are the double and single flowering, which from the Seeds of the double, the single is frequently produced, but the Seeds of the single seldom vary to the double. The Flowers of these Plants alter in their Colour, for at their first Opening they are white, then they change to a bluish Rose Colour, and as they decay they turn to a purple. In the *West-Indies*, all these Alterations happen the same Day, as I suppose the Flowers in those hot Countries, are not of longer Duration, but in *England*, where the Flowets last a Week in Beauty, the Changes are not so sudden.

This Plant hath a soft spongy Stem, which, by Age, becomes ligneous and pithy. It rises to the Height of 12 or 14 Feet, sending out Branches on every Side, toward the Top, which are hairy, and garnished with Heart-shaped Leaves, cut into 5 acute Angles on their Borders, and slightly sawed on their Edges, of a lucid green on their upper Side, but pale below, standing alternately on pretty long Foot Stalks. The Flowers are produced from the Wings of the Stalk, like those of the 1st Sort; the single one is composed of 5 large Petals, which spread open, and are first white, but afterwards change in the Manner before-mentioned; these are succeeded by short, thick, blunt Capsules, which are very hairy, having 5 Cells, which contain many small Kidney-shaped Seeds, having a fine Plume of fibrous Down adhering to them.

This Sort is propagated by Seeds, which must be sown on a hot Bed in the Spring, and when the Plants are fit to remove, they should be each planted in a separate small Pot filled with Kitchen Garden Earth, and plunged into a moderate hot Bed, where they must be shaded till they have taken new Root, then they must be treated as other Plants from warm Countries, but not too tenderly, for they require a large share of Air in warm Weather, otherwise they will draw up very weak; these Plants should not be quite exposed to the open Air the first Season, and the first Winter will require the Warmth of a moderate Stove, but as they get more Strength, they may be treated with less Care, for they will bear the open Air in Summer, in a warm sheltered Situation, and will live through the Winter in a very good Green-house, provided they have not too much Wet, but the Plants thus hardily treated, will not make so great Progress, nor flower so well as with a little additional Warmth, and if they are too tenderly managed, they will draw up weak, so will be less likely to flower. This Sort usually flowers in *England* in November, so that it keeps to the usual Time of flowering in its native Country.

The 3d Sort grows naturally in the *West-Indies*, where it is commonly known by the Title of Musk; the *French* cultivate great Quantities of these Plants in their *American* Islands, the Seeds of which are annually sent to *France* in great Quantities, so that they certainly have some Way of rendering it useful, as it seems

to be a considerable Branch of Trade. This rises with an herbaceous Stalk about 3 Feet high, sending out 2 or 3 Side Branches, garnished with large Leaves cut into 6 or 7 Angles, which are acute, and sawed on their Edges; these stand on long Foot Stalks, and are placed alternately. The Stalks and Leaves of this are very hairy. The Flowers come out from the Wings of the Stalk on pretty long Foot Stalks, which stand erect, they are large, of a Sulphur Colour, with dark purple Bottoms, and are succeeded by pyramidal 5 cornered Capsules, which open in 5 Cells, filled with large Kidney-shaped Seeds of a very musky Odour.

This Sort seldom lives more than one Year in *England*, but in its native Country will last two. It is propagated by Seeds, which, if sown on a good hot Bed in the Spring, and the Plants afterward planted in Pots filled with light Earth, and plunged into a fresh hot Bed, treating them afterward as the *Amaranthus*, they will flower in *July*, and their Seeds will ripen in Autumn.

The 4th Sort grows naturally in both the *Indies*; this rises with an herbaceous smooth Stalk, 3 or 4 Feet high, garnished with Leaves, divided into 5 Segments, almost to the Bottom, the middle Part being 4 Inches long, and half an Inch broad, the 2 upper lateral Segments about 3 Inches long, and the same Breadth; these are indented at their Extremities, but the 2 lower Segments are not much more than an Inch long; these have Foot Stalks 4 Inches long. The Flowers are produced from the Wings of the Stalks toward the Top, standing on short Foot Stalks, they are composed of 5 large Sulphur-coloured Petals, which, when open, spread 5 Inches wide, they have a dark purple Bottom, with a Column of Stamina, and Styles rising in the Center, and are succeeded by large pyramidal 5 cornered Seed Vessels, opening in 5 Cells, filled with pretty large Kidney-shaped Seeds, which have little Smell or Taste.

It is propagated by Seeds as the former Sort, and if so managed, will produce Flowers and perfect Seeds the same Season, but the Plants may be continued through the Winter in a moderate Warmth, though few Persons are at the Trouble of preserving the Plants, after they have ripened their Seeds, because the young Plants make a much better Appearance.

The 5th Sort grows naturally in the *West-Indies*, where it rises with a woody Stalk, 7 or 8 Feet high, sending out many Side Branches toward the Top, covered with a whitish Bark, and garnished with angular Heart-shaped Leaves, which are woolly, they are about 4 Inches long, and 3 broad toward their Base, ending in acute Points, and have several longitudinal Veins. The Flowers are produced from the Wings of the Stalk, upon long Foot Stalks, they are composed of 5 roundish Petals, joined at their Base, but open above, and of a yellow Colour, turning to a red as they decay; these are succeeded by large, obtuse, five cornered hairy Seed Vessels, which open in 5 Cells filled with large Kidney-shaped Seeds.

This is propagated by Seeds, which must be sown on a hot Bed in the Spring, and the Plants afterward treated as the two last mentioned, during the first Summer, but in Autumn they must be plunged into the Tan Bed in the Stove, where they should constantly remain

main, and be treated as other tender Plants from the same Country, giving them but little Water in Winter; the second Year the Plants will flower, but they have not as yet perfected Seeds in *England*.

The 6th Sort grows naturally in both *Indies*; this rises with a woody pithy Stem, 8 or 10 Feet high, dividing into several Branches toward the Top, covered with a woolly Down, and garnished with round Heart-shaped Leaves, ending in acute Points, they are of a lucid green on their upper Side, and hoary on their under, full of large Veins, and are placed alternately on the Stalks. The Flowers are produced at the End of the Branches, in loose Spikes, they are of a whitish yellow Colour, and are succeeded by short acuminate Capsules, opening in 5 Cells, filled with large Kidney-shaped Seeds.

This Sort is propagated the same Way, and the Plants require the same Treatment as the 5th, and flower the second Year, provided they are brought forward, otherwise they will not flower before the third or fourth Season, but they will bear the open Air in Summer, in a warm Situation, though they will not make great Progress there.

The 7th Sort grows naturally on the Coast of *Malabar*, from whence I received the Seeds; this rises with a woody Stalk, 12 or 14 Feet high, dividing into many small Branches toward the Top, garnished with oval sawed Leaves, ending in acute Points, they are of a lucid green above, but pale on their under Side, and placed without Order. The Flowers come out from the Side of the Branches, at the Wings of the Leaves, on pretty long Foot Stalks, they are composed of many oblong roundish Petals of a red Colour, which expand like the rose, the Flowers being as large when fully blown, as the common red Rose, and as double. This is a perennial Plant, which is propagated by Seeds as those last mentioned, and the Plants must constantly be kept in the Tan Bed in the Stove, giving them a large Share of Air in warm Weather, and but little Water in Winter.

The 8th Sort is an annual Plant, which rises with an upright Stalk, 7 or 8 Feet high; the lower Leaves are oval, serrated, and entire, but the upper Leaves are divided almost to the Foot Stalk, into 5 Spear-shaped Segments, like the Fingers of a Hand, standing on very long Foot Stalks, which have Thorns at their Base, and are sharply sawed on their Edges. The Flowers come out from the Wings of the Stalks, they are large, of a pale Sulphur Colour, with a dark purple Bottom, and are succeeded by oval acuminate prickly Capsules, which open in 5 Cells, filled with large Kidney-shaped Seeds.

This Sort is propagated by Seeds, which must be sown on a hot Bed, and the Plants treated as the third Sort, and when they are grown too tall to stand under the Frames, they must be placed in the Stove, where they will flower in *August*, and the Seeds will ripen in Autumn.

The 9th Sort is near of Kin to the 8th, but the Stalks do not grow so tall, the lower Leaves are Heart-shaped and entire, the middle Leaves are divided into 3, and the upper into 5 Segments, almost to the Foot Stalks, they are sawed on their Edges, and the Stalk is prickly.

The Flowers come out from the Wings of the Stalks, they are of a very pale Sulphur, with dark Bottoms, but are not so large as those of the last.

This is propagated by Seeds as the eighth, and the Plants require the same Treatment. It flowers in *July* and *August*, and the Seeds ripen in Autumn.

The Bark of both these Plants is full of strong Fibres, which I have been informed the Inhabitants of the *Malabar* Coast prepare and make into a strong Cordage, and by what I have observed it may be wrought into fine strong Thread of any Size, if properly manufactured.

The 10th Sort grows naturally in the *West-Indies*, where the Inhabitants use the green Pods to add an acid Taste to their Viands; there are two Varieties of this, one with a light green, and the other a deep red Pod, which always maintain their difference, but as there is no other Difference but that of the Colour of their Pods, they do not deserve separate Titles. This rises with an herbaceous Stem, about 3 Feet high, sending out several lateral Branches, garnished with smooth Leaves, divided into 5 Lobes. The Flowers come out from the Side of the Branches, they are of a dirty white, with dark purple bottoms, and are succeeded by obtuse Seed Vessels, divided into 5 Cells, filled with Kidney-shaped Seeds.

This Sort is propagated as the third, and will flower and perfect Seeds the same Year, so is seldom preserved longer in *England*.

The 11th Sort is a Native of *Ceylon*; this rises with an herbaceous Stalk, which is prickly, from 2 to 3 Feet high, dividing upward into small Branches, garnished with Hand-shaped Leaves, divided into 5 Parts. The Flowers come out from the Wings of the Leaves, they are small and white, with purple Bottoms, and are succeeded by short obtuse Capsules with 5 Cells filled with Kidney-shaped Seeds. The Seeds of this Sort were sent me by Dr. *Breynius* of *Dantzick*.

This Plant is annual, so must be treated as the third.

The 12th Sort is also annual with us; this rises with an herbaceous Stalk, 3 Feet high, which hath prickly Hairs, and divides into Branches upward, garnished with Hand-shaped Leaves, divided into 5 Lobes, which are Spear-shaped, ending in acute Points, they are hairy, and crenated on their Edges, standing on very long Foot Stalks, the Flowers come out from the Wings of the Stalk, and are very like those of the third; this Plant requires the same Culture as the third Sort. The Seeds of this were sent me by Dr. *Jussieu*, from *Paris*.

The 13th Sort was discovered by the late Dr. *Houstoun* in the Island of *Cuba*, from whence he sent me the Seeds. This rises with a woody Stalk 12 or 14 Feet high, sending out many lateral Branches, garnished with hairy, Heart-shaped Leaves, crenated on their Edges; the Flowers come out single from the Wings of their Leaves; they are of a very bright yellow Colour, but not so large as either of the former Sorts, and are succeeded by short Capsules ending in acute Points, divided into 5 Cells, filled with Kidney-shaped Seeds. This Plant is tender, so requires the same Treatment as the fifth, and other tender Kinds, with which Management it flowers and produces good Seeds here.

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The 14th Sort hath a perennial Root, but an annual Stalk. The Seeds were sent me from the *Babama Islands*, which succeeded in the *Chelsea* Garden, where the Plants produced Plenty of Flowers, but did not ripen their Seeds. This rises with several Stalks from the Root, 4 Feet high, garnished with oblong Heart-shaped Leaves, ending in acute Points; they are smooth, and of a light green on their upper Side, but hoary on their under, and are slightly indented on their Edges, standing upon long Foot Stalks; the Flowers are produced on the Top of the Stalks, they are very large, and of a light purple Colour with dark Bottoms, and are succeeded by short Capsules divided into 5 Cells, filled with Kidney-shaped Seeds.

This is propagated by Seeds, which must be sown on a moderate hot Bed in the Spring, and when the Plants are fit to remove, they should be each planted in a separate small Pot, and plunged into a hot Bed, treating them as the other tender Sorts, but allowing them a greater Share of Air in warm Weather; for these may be brought to stand in the open Air in Summer, but unless the Season is very warm they will not flower; for those which flowered in the *Chelsea* Garden, were plunged into a Tan Bed whose heat was declining, under a deep Frame, where they produced Plenty of Flowers, but they came too late to ripen Seeds. The Stalks decay in the Autumn, but if the Pots are sheltered under a hot Bed Frame, they will continue several Years, and put out new Stalks in the Spring.

The 15th Sort is very common in the *West-Indies*, where the Inhabitants cultivate it for the Pods or Seed Vessels, which they gather green to put into their Soups; these, having a soft viscid Juice, add a Thickness to their Soups, and renders them very palatable. It rises with a soft herbaceous Stalk 3 Feet high, dividing upward into many Branches, garnished with Hand-shaped Leaves, divided into 5 Parts; the Flowers are produced from the Wings of the Stalk, they are of a pale Sulphur Colour, with dark purple Bottoms, but are smaller than either of the other Sorts, and of very short Duration, opening in the Morning with the rising Sun, but are faded long before Noon in warm Weather. These are succeeded by Capsules of very different Forms, in the different Varieties; in some the Capsules are not thicker than a Man's Finger, and 5 or 6 Inches long; in others they are very thick, and not more than 2 or 3 Inches long; in some Plants they grow erect, in others they are rather inclined; and these Varieties are constant, for I have many Years cultivated these Plants, and have not found them vary.

This Sort is propagated by Seeds as the third, and the Plants require the same Treatment, for they are too tender to thrive in the open Air in this Country; I have often transplanted the Plants into warm Borders, after they have acquired proper Strength; and have sometimes in very warm Seasons had them thrive for a short Time, but the first cold bad Weather their Leaves have all dropped off, and then they have decayed gradually, so that they have but rarely flowered, and have never in the best Seasons perfected their Seeds; therefore those who are inclinable to cultivate these Plants, must constantly shelter them in bad Weather.

The 16th Sort grows naturally near *Venice*, in moist

Land; this hath a perennial Root, and an annual Stalk, which rises about 3 Feet high; the lower Leaves are angular and Heart-shaped, but the upper are Spear-shaped, and slightly indented on their Edges; the Flowers are produced from the Wings of the Leaves, upon long Foot Stalks; they are small, and of a purple Colour with a dark Bottom, and are succeeded by 5 cornered compressed Capsules, filled with Kidney-shaped Seeds.

This Sort is propagated by Seeds, which must be sown on a hot Bed, and the Plants should be treated as the 14th Sort, otherwise they will not flower; for although the Roots will live in the full Ground here, yet the Summers are not warm enough to bring them to flower. I have some of the Roots which have remained 7 Years, putting up many Stalks, which rise upward of 2 Feet, and have the Flower Buds formed on their Tops, but these appear so late in the Season, that they never have opened.

The 17th Sort grows naturally in *North America*; this hath a perennial Root, and an annual Stalk; the Roots of this Sort will live in full Ground, but unless the Summer is warm, the Flowers seldom open. It rises with single Stalks from the Root, 2 Feet high or more; the Leaves are oval and sawed, the Flowers are large and purple.

The 18th Sort grows naturally in *North America*, in moist Ground. This hath a perennial Root, and an annual Stalk like the former, which is herbaceous and never branches; the Leaves are oval, with 3 Lobes not deeply divided; they are of a bright green on their upper Side, but woolly on their under; the Flowers are produced from the Wings of the Stalk, they are large, and of a bright purple Colour. This Sort like the former, seldom flowers in the open Air here, unless the Summer proves very warm, but the Roots will live in the full Ground, if planted in a sheltered Situation. The only Way to have these Plants flower in this Country, is to keep the Roots in Pots, and shelter them under a Frame in Winter, and in the Spring plunge them into a gentle hot Bed, which will cause them to put out their Stalks early; and when the Stalks are so high as to reach the Glasses, the Pots may be removed into a Glass Case, where, if they are duly supplied with Water, and have plenty of Air in hot Weather, they will flower very well in *July*, and in warm Seasons will ripen their Seeds.

The 19th Sort is an annual Plant, which grows naturally in some Parts of *Italy*, and has been long cultivated in the *English* Gardens, by the Title of *Venice Malva*. *Gerard* and *Parkinson* title it *Alcea Veneta*, and *Flos Horæ*, or Flower of an Hour, from the short Duration of its Flowers, which in hot Weather continue but few Hours open; however, there is a Succession of Flowers which open daily for a considerable Time, so that a few of these Plants may be allowed a Place in every curious Garden.

It rises with a branching Stalk a Foot and a Half high, having many short Spines which are soft, and do not appear unless closely viewed; the Leaves are divided into 3 Lobes, deeply jagged almost to the Midrib; these Jags are opposite, and the Segments are obtuse; the Flowers come out at the Joints of the

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Stalks on pretty long Foot Stalks, having a double Empalement, the outer being composed of 10 long narrow Leaves, which join at their Base; the inner is of one thin Leaf, swollen like a Bladder, cut into 5 acute Segments at the Top, having many longitudinal purple Ribs, and is hairy; both these are permanent, and inclose the Capsule after the Flower is past. The Flower is composed of 5 obtuse Petals, which spread open at the Top, the lower Part forming an open Bell-shaped Flower; these have dark purple Bottoms, but are of a pale Sulphur Colour above, having the Stamina and Apices joined in a Column in the Center; after the Flower is past, the Germen turns to a blunt Capsule opening in 5 Cells, filled with small Kidney-shaped Seeds. It flowers in *June, July, and August*, and the Seeds ripen about a Month after. This Sort is propagated by Seeds, which should be sown where the Plants are designed to remain, for they do not bear transplanting well; if the Seeds are sown in Autumn, the Plants will come up early in the Spring, so will flower early in the Summer, and those which are sown in the Spring will succeed them; so that by sowing them at three different Seasons, they may be continued in Succession till the Frost stops them. These require no other Culture, but to keep them clean from Weeds, and thin them where they are too close; and if the Seeds are permitted to scatter, the Plants will come up full as well as when sown, so that it will maintain its Situation, unless it is weeded out.

The 20th Sort grows naturally at the *Cape of Good Hope*; this is also an annual Plant which resembles the former, but the Stalks grow more erect, are of a purplish Colour, and very hairy; the Leaves are composed of 3 Lobes, divided almost to the Foot Stalk; these are narrow, the middle Lobe stretching out more than twice the Length of the two Side Lobes, and they are but slightly indented on their Edges, whereas those of the former are cut almost to the Mid-rib; the Flowers are larger and their colour deeper, than those of the other.

The 21st Sort came from the *Cape of Good Hope*, and is very like the last mentioned, but differs in the Leaves, which are divided into very long narrow Lobes, very little indented on their Edges. The Difference in these three Plants is constant, for I have propagated them 30 Years, and have never found either of them vary.

The Seeds of the 22d Sort were sent me from the *Cape of Good Hope*, a few Years past. This is also an annual Plant, having at first Sight some Resemblance of the other Sorts before-mentioned; but it rises with strong hairy branching Stalks, garnished with much broader Leaves than either of the former, the lower being divided into 3, the upper into 5 obtuse Lobes, crenated on their Edges; the Flowers are large, but of a paler Colour than those of the other. This has maintained the Difference 5 Years, so that there is no Doubt of its being a distinct Species.

All these are as hardy as the 19th Sort, so may be treated the same Way.

The 23d Sort grows naturally at *Campeachy*, from whence the late Dr. *Houssoun* sent me the Seeds. This differs so essentially from the other Species in its Fructification, as to deserve another Title, for all the other

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have dry Capsules with 5 Cells, including many Kidney-shaped Seeds, but this hath a soft viscous Berry, with a hard Shell inclosed, containing 5 roundish Seeds: It rises with a shrubby Stalk 10 or 12 Feet high, dividing into many Branches, garnished with smooth Heart-shaped angular Leaves, crenated on their Edges; the Flowers come out from the Wings of the Stalks singly, standing on short Foot Stalks; they are composed of 5 oblong Petals, which are twisted together and never expand; they are of a fine scarlet, and are succeeded by roundish Berries of a scarlet Colour when ripe, inclosing a hard Shell, which opens in 5 Cells, each containing a single roundish Seed.

This Sort is generally propagated here by Cuttings, because the Seeds do not often ripen here; if the Cuttings are planted in Pots filled with light Earth, and plunged into a gentle hot Bed, keeping the Air from them, they will soon take Root, and should be gradually inured to bear the open Air. These Plants require a moderate Stove to preserve them through the Winter, and if they are kept warm in Summer, they will flower, and sometimes ripen Fruit, though they may be placed abroad in a sheltered Situation for 2 or 3 Months in Summer, but the Plants so treated seldom flower.

The 24th Sort grows naturally in *South Carolina*, from whence the late Dr. *Dale* sent me Specimens and Seeds. This rises with a woody Stalk 5 or 6 Feet high, dividing into several Branches upward, closely garnished with smooth Spear-shaped Leaves, sitting close to the Branches; they are 4 Inches long, one and a Half broad in the Middle, slightly indented on their Edges, and of a thick Consistence; the Flowers come out from the Wings of the Branches, upon very long Foot Stalks; they are composed of 5 oblong yellow Petals, which spread open at the Top; in the Center is situated a great Number of Stamina, terminated by oblong Summits; these are joined at their Base to the Style, and form a short Column, but spread open at the Top, filling the Mouth of the Tube; the Seed Vessel divides into 5 Cells, each containing 2 Seeds.

This Plant grows naturally in Water, so is scarce to be kept alive in this Country: I raised several of the Plants, which continued till Winter, but not one of them survived, though I placed some of them in the Stove, and supplied them well with Water.

HIERACIUM. Lin. Gen. Pl. 818. Tourn. Inst. R. H. 469. Tab. 267. Hawkweed.

The Characters are,

It hath a Flower composed of many hermaphrodite Florets, included in one common scaly Empalement, whose Scales are narrow, and very unequal in their Length and Position; the Florets are equal and uniform, they have 1 Petal shaped like a Tongue, indented in 5 Parts at the Point, and placed Imbricatim over each other; these have each 5 short hairy Stamina, terminated by cylindrical Summits. At the Bottom of the Petal is situated the Germen, supporting a slender Style, crowned by 2 recurved Stigmas; the Germen afterward becomes a short 4 cornered Seed crowned with Down, sitting in the Empalement.

There are a great Number of Species of this Genus, many of which grow naturally as Weeds in *England*, and the others are so in different Countries, therefore I shall

shall only select those which are the most beautiful, and best worth cultivating from the Number.

1. *HIERACIUM foliis oblongo-ovatis dentatis tomentosis, caule erecto ramoso lanuginoso.* Hawkweed with oblong, oval, woolly, indented Leaves, and an erect branching Stalk covered with Down. *Hieracium montanum tomentosum.* H. R. Blaf. Woolly Mountain Hawkweed.

2. *HIERACIUM caule ramoso, foliis radicalibus ovatis dentatis, caulino minori.* Hort. Cliff. 389. Hawkweed with a branching Stalk, whose lower Leaves are oval and indented, and those on the Stalks smaller. *Hieracium murorum, folio pilosissimo.* C. B. P. 129. Wall Hawkweed with a very hairy Leaf.

3. *HIERACIUM foliis integris, caule subnudo simplicissimo piloso corymbifero.* Hort. Cliff. 388. Hawkweed with entire Leaves, and a single hairy naked Stalk, terminated by a Corymbus of Flowers. *Hieracium hortense, floribus atro purpurascens.* C. B. P. 128. Garden Hawkweed with dark purple Flowers.

4. *HIERACIUM foliis radicalibus obovatis denticulatis, caulinis oblongis semialexicaulibus.* Prod. Leyd. 124. Hawkweed with oval indented Leaves at the Root, those on the Stalks oblong, and half embracing them, *Hieracium Pyrenaicum folio cerinibes.* Schol. Bot. Pyrenean Hawkweed with a Honeywort Leaf.

5. *HIERACIUM foliis lanceolatis amplexicaulibus dentatis, floribus solitariis, calycibus laxis.* Hort. Cliff. 387. Hawkweed with Spear-shaped indented Leaves embracing the Stalks, Flowers growing singly, and loose Empalements. *Hieracium Pyrenaicum, blattariae folio, minus birsutum.* Tourn. Inst. 472. Pyrenean Hawkweed with a Moth Mullein Leaf, less hairy.

6. *HIERACIUM foliis amplexicaulibus cordatis subdentatis, pedunculis unifloris birsutis, caule ramoso.* Hort. Cliff. 387. Hawkweed with Heart-shaped indented Leaves embracing the Stalks, hairy Foot Stalks bearing one Flower, and a branching Stalk. *Hieracium Pyrenaicum rotundifolium amplexicaule.* Schol. Bot. Pyrenean Hawkweed, with round Leaves embracing the Stalks.

7. *HIERACIUM foliis oblongo-ovatis acutè dentatis subtus tomentosis, caule nudo simplici umbellifero.* Hawkweed with oblong oval Leaves sharply indented, and woolly on their under Side, and a single naked Stalk, terminated by an Umbel of Flowers. *Hieracium foliis latis, leviter dentatis, subtus niveis.* Sloan. Hort. Sicc. Hawkweed with broad Leaves slightly indented, and of a Snow white Colour on their under Side.

The 1st Sort grows naturally on the Apennine Mountains; it sends out from the Root many oblong, oval, indented Leaves, very woolly and white; from between the Leaves arise a branching Stalk, little more than a Foot high, covered over with a woolly Down, and garnished with downy Leaves of the same Shape as the lower, but less; these sit very close to the Stalks; the Flowers are produce singly at the End of each Branch; they are large and of a bright yellow, composed of many Florets, which are succeeded by 4 cornered, oblong, black Seeds, crowned with a white Down, which, when ripe, are, by the Elasticity of the Down, drawn out of the Empalement, and by the first strong Gale of Wind, waisted to a considerable Distance. The Flowers appear by the Beginning of June, and the Seeds ripen in about 5 or 6 Weeks after, but there is frequently a Succession of Flowers till the Autumn.

It is propagated by Seeds, which should be sown in an East aspected Border in March; and when the Plants come up, they must be kept clean from Weeds, till they are strong enough to remove, which will be by the Beginning of June; then they should be transplanted to a shady Border of undunged Ground, at 6 Inches Distance, observing to water them if the Weather should prove dry, till they have taken new Root; after which, if they are kept clean from Weeds, they will require no other Culture: In Autumn they should be transplanted where they are to remain; the following Summer they will flower and produce ripe Seeds, and the Roots will continue some Years, if not planted in a rich or moist Soil, which frequently occasions their rotting in Winter. This Plant with its silvery Leaves, makes a pretty Variety in the Garden, so deserves a Place, though the Flowers are not very remarkable for their Beauty.

The 2d Sort hath very hairy, oval, indented Leaves; the Stalks rise about the same Height as the former, branching into several Divisions, terminated by a large single yellow Flower, of the Shape of the former. This flowers in June, and the Seeds ripen in August. It grows naturally in some Places in the North of England; it is a perennial Plant, and may be propagated as the former Sort.

The 3d Sort grows naturally in Syria, but has been long an Inhabitant of the English Gardens, where it is cultivated for its fine purple Flowers. This was formerly known by the Title of *Grim the Collier*, which was probably given it from the dark Colour of the Empalement.

This hath a perennial fibrous Root, which sends out many oblong, oval, entire Leaves, between which arises a single Stalk near a Foot high, naked toward the Bottom, and terminated by a Corymbus of Gold coloured Flowers, which appear in Succession from the Beginning of June to September, and are succeeded by Seeds crowned with Down, which ripen in August and September. This Sort sends out many Offsets from the Root, by which it is easily propagated, or it may be raised from Seeds as the first Sort: The best Time to transplant them is the Autumn. This will thrive in any Soil or Situation.

The 4th Sort grows naturally on the Pyrenean Mountains. It is a perennial Plant, whose lower Leaves are oval, indented, and of a grayish Colour; those on the Stalks are smaller, but of the same Shape and Colour, and half embrace the Stalks with their Base; the Stalks rise a Foot high, branching into several Divisions, each being terminated by 1 yellow Flower. This is propagated by Seeds as the first Sort.

The 5th Sort grows on the Pyrenees; it hath a perennial Root, which sends up several erect Stalks, garnished with Spear-shaped Leaves which are indented, and embrace the Stalks with their Base; the Flowers are produced from the Wings of the Stalks, on short Foot Stalks, each sustaining 1 large yellow Flower. This flowers in June, but seldom perfects Seeds here, so is propagated by parting the Roots in Autumn; it will thrive in any Situation.

The 6th Sort rises with a branching Stalk a Foot and a Half high, garnished with Heart-shaped Leaves

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indented at their Base, where they embrace the Stalks; each Division of the Branches terminates in a hairy Foot Stalk, sustaining 1 large yellow Flower, which appears in *May*, and the Seeds ripen in *July*. This is a perennial Plant, which is propagated by Seeds as the first Sort, and requires the same Treatment.

The 7th Sort grows naturally in *Jamaica*, from whence the late Dr. *Houfoun* sent me the Seeds. This Plant sends out several Side Branches from the Root, garnished with oblong, oval, indented Leaves, woolly on their under Side, with 1 prominent Midrib, and several branching transverse Ribs; the Stalk is single and naked, rising about 6 Inches high, terminated by an Umbel of yellow Flowers.

This is propagated by Seeds, which must be sown on a hot Bed, and the Plants afterward planted in separate small Pots filled with light Earth, and then plunged into a fresh hot Bed, treating them as other tender Plants. They must be placed in the Stove in Winter, and the Summer following they flower.

HILLS have many Uses, of which I shall only mention two or three.

1st, They serve as Screens, to keep off the cold and nipping Blasts of the Northern and Eastern Winds.

2dly, The long Ridges and Chains of lofty Mountains, being generally found to run from East to West, serve to stop the Evagation of those Vapours toward the Poles, without which they would all run from the hot Countries, and leave them destitute of Rain.

3dly, They condense those Vapours, like Alembick Heads, into Clouds; and so by a Kind of external Distillation, give Origin to Springs and Rivers; and by amassing, cooling, and dissipating them, turn them into Rain, and by that Means render the fervid Regions of the Torrid Zone habitable.

4thly, They serve for the Production of a great Number of Vegetables and Minerals, which are not found in other Places.

It hath been found by Experiment and Calculation, that Hills, though they measure twice as much as the plain Ground they stand upon, yet the Produce of the one can be no more than the other; and therefore, in purchasing Land, the Hills ought not to be bought for more than their superficial Measure, *i. e.* to pay no more for two Acres upon the Side of a Hill, than for one upon the Plain, if the Soil be equally rich.

It is true, that those Lands that are hilly and mountainous, are very different as to their valuable Contents, from what are found in flat and plain Ground, whether they be planted, sown or built upon; as for Example:

Suppose a Hill contains four equal Sides, which meet in a Point at Top; yet the Contents of these four Sides can produce no more Grain, or bear no more Trees, than the plain Ground on which the Hill stands, or than the Base of it; and yet by the Measure of the Sides, there may be double the Number of Acres, Rods, and Poles, which they measure on the Base or Ground Plot.

For as long as all Plants preserve their upright Method of growing, hilly Ground can bear no more Plants in Number than the plain at the Base.

Again, as to Buildings on a Hill, the two Sides of a Hill will bear no more than the same Number of Houses

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that can stand in the Line at the Base.

And as to Rails, or Park Pailing over a Hill; though the Measure be near double over the Hill to the Line at the Bottom, yet both may be inclosed by the same Number of Pales of the same Breadth.

HIPPOCASTANUM. *Tourn. Inst. R. H. 611. Tab. 382. Esculus. Lin. Gen. 420. of 1111, Gr. a Horse, and Castanea, Lat. a Chestnut.] Horse Chestnut; in French, Marronier d'Inde.*

The Characters are,

The Flower hath a small swelling Empalement of 1 Leaf, indented in 5 Parts. It hath 5 Petals, narrow at their Base, where they are inserted in the Empalement, but roundish at the Top, spreading open, and folded and waved on their Borders. It hath 7 Awl-shaped Stamina which decline, and are as long as the Petals, terminated by rising Summits. It hath a roundish Germen, sitting upon an Awl-shaped Style, crowned by an acute Stigma. The Germen becomes a thick roundish Capsule set with Thorns, opening in 3 Cells, inclosing 1 or 2 globular Nuts.

We have but one Species of this Genus, *viz.*

HIPPOCASTANUM. Horse Chestnut. This is the *Hippocastanum vulgare.* *Tourn. Inst. R. H. 612.* Common Horse Chestnut.

There are 2 Varieties of this Tree with variegated Leaves, one has white and the other yellow Blotches; but these are very apt to become plain, when they are planted in good Ground and grow vigorously, so are scarce worth propagating.

In the Horse Chestnut there seem to be two or three Varieties, differing in the Breadth of their Leaves, and the Colour of their Flowers, one of which hath its Flowers remarkably spotted with red and yellow, so as to be seen at a great Distance, and is somewhat later in flowering.

This Tree was greatly in Fashion some Years ago, when the Avenues to Houses, and other shady Walks were commonly planted with them, but there are few Sorts of Trees more unfit for this Purpose; because their regular pyramidal Growth is obstructed, when they stand near each other, so that the Branches will interfere on each Side in the Lines, by which they will be prevented flowering; and as these Leaves begin to decay by the End of *July*, they make a very bad Appearance after that Time; and by their Leaves falling, they occasion a Litter for near 3 Months; upon these Accounts it has been less esteemed of late Years.

But although it is not so proper for Avenues as many other Trees, yet it should not be wholly excluded from Gardens; where, if properly disposed, it has a very good Effect, especially during its Continuance in flower. They should always be planted singly at a Distance from each other, or from any other Trees; for when they have full Room to extend their Branches, they will form a natural Parabola or Cone, spreading 12 Feet or more on every Side, and this in the Compass of a few Years; and when they stand thus detached, every Shoot will produce a Spike of Flowers; so that the whole Tree will be covered with them, and make a goodly Shew. It flowers in *May*.

This Tree is propagated by planting the Nuts early in Spring, as was directed for the common Chestnut, to which I refer the Reader to avoid Repetition. The Spring

The Spring following the Plants may be transplanted into a Nursery, in Rows, at 3 Feet Distance, and 18 Inches asunder in the Rows, where they may continue 3 Years, after which Time they may be transplanted where they are to remain; the best Season for transplanting them is in Autumn, or during any of the Winter Months, when other deciduous Trees are removed, for this Tree puts out early in the Spring.

In transplanting these Trees we should never shorten any of their Branches, but only cut off intirely all such as are ill placed, or grow irregular; for they have always a large turgid Bud placed at the Extremity of their Branches, in which is inclosed the future Shoot; which Bud is of great Service in attracting the Nourishment, and promoting the Growth of the Tree; and it is often observed, where their Branches are shortened, that there is produced a glutinous Substance, almost of the Consistence of Turpentine, which often occasions the Decay of those particular Branches, and sometimes of the whole Tree.

These Trees have something very singular in their Growth, i. e. that their whole Year's Shoot is commonly performed in 3 Weeks Time; after which it does no more than increase in Bulk, and become more firm and substantial, and all the latter Part of the Summer is occupied in forming and strengthening the Buds for the next Year's Shoots. There is a great Regularity in the natural Growth of these Trees, their under Branches being always greatly extended; and the succeeding ones decreasing gradually to the Top, form a natural obtuse Pyramid, which Regularity is by many People greatly disliked, as appearing too much like those artificial Pyramids, which were formerly so much esteemed and cultivated on ever-green Trees, but are now very justly despised by all curious Persons; though it must be allowed, where these Trees are rightly disposed in forming Clumps, &c. their conical Figure has a very good Effect, by rendering such Plantations very agreeable to the Eye at some Distance, especially when the under Parts of the Trees are hid from Sight by other Trees, which surround them.

These Trees were originally brought from *Constantinople* into *Europe*. The Laurel and the Horse Chestnut were made Denizens of *England* at the same Time, which was about the Year 1610; but although they are Natives of so warm a Country, yet they are now so injured to the Cold, as to defy the severest of our Winters, and grow to be very large Trees, and produce great Quantities of Nuts annually, from which they may be multiplied at Pleasure. The Fruit of this Tree is very bitter, and of little Use amongst us at present; but in *Turkey* they give them to Horses, in their Provender, that are troubled with Coughs, or are short winded, in both which Distempers they are supposed to be very good. The Deer are very fond of these Nuts, so that in large Parks there should be many of these Trees planted, which will have a good Effect to vary the Objects, and be of great Use to the Deer.

HIPPOCRATEA. *Lin. Gen. Pl.* 1098. *Col. Plum. Nov. Gen.* 8. *Tab.* 35.

The Characters are,

It hath a large spreading Empalement of 1 Leaf, cut at the Top into 5 Segments; the Flower hath 1 oval Pe-

tal which is entire, oval, and truncated at the Point. It hath 6 slender short Stamina, terminated by prostrate Summits, and 1 oval Germen situated below the Petal, having no Style, but crowned by a short slender Stigma. The Germen becomes an oblong Capsule winged at the Top, inclosing a single Seed.

I have seen but one Species of this Genus, viz.

HIPPOCRATEA fructu trigemino subrotundo, caule volubili. *Hippocratea* with a triple roundish Fruit, and a twining Stalk. This is the *Coa scandens, fructu trigemino subrotundo.* *Plum. Nov. Gen.* 8. Climbing Coa with a triple roundish Fruit.

The Seeds of this Plant were sent from *Campeachy* by Mr. Robert Millar, and several of the Plants were raised in *England*, which continued two Years in several Gardens, but not one of them lived to flower; they grew to the Height of 8 or 10 Feet, twining round Stakes, but their Stalks were very slender, and decayed at the Bottom, probably from their having too much Wet.

It is a very tender Plant, so must be constantly kept in the Bark Bed in the Stove, and should have but little Wet in Winter.

HIPPOCREPIS. *Lin. Gen. Pl.* 791. *Ferrum equinum.* *Tourn. Inst. R. H.* 400. *Tab.* 225. Horseshoe vetch; in French, *Fer de Chaval.*

The Characters are,

The Empalement of the Flower is permanent, of 1 Leaf, divided into 5 Parts, the 2 upper being joined. The Flower is of the Butterfly Kind; the Standard hath a narrow Base the Length of the Empalement; but is Heart-shaped above; the Wings are oval, oblong, and blunt; the Keel is Moon-shaped and compressed. It hath 10 Stamina, 9 joined and 1 separate, which stands erect, terminated by single Summits. It hath an oblong narrow Germen, sitting on an Awl-shaped Style, crowned by a single Stigma. The Germen becomes a long plain compressed Pod, cut into many Parts from the under Seam to the upper, each Part forming a roundish Sinus with obtuse 3 cornered Joints, connected to the upper Seam, each Joint being shaped like a Horseshoe, inclosing a single Seed.

The Species are,

1. *HIPPOCREPIS leguminibus sessilibus solitariis.* *Hort. Cliff.* 364. Horseshoe Vetch, with single Pods sitting close to the Stalk. *Ferrum equinum, siliqua singulari.* *C. B. P.* 349. Horseshoe Vetch with a single Pod.

2. *HIPPOCREPIS leguminibus pedunculatis confertis, margine exteriori repandis.* *Prod. Leyd.* 384. Horseshoe Vetch, with Pods growing in Clusters upon Foot Stalks, whose outer Border is turned inward. *Ferrum equinum Germanicum, siliquis in-summitate.* *C. B. P.* 346. German Horseshoe Vetch, having Pods on the Tops of the Stalks.

3. *HIPPOCREPIS leguminibus pedunculatis confertis, margine altero lobatis.* *Hort. Cliff.* 364. Horseshoe Vetch, with Pods growing in Clusters upon Foot Stalks, one Border of which has Lobes. *Ferrum equinum siliqua multiplici.* *C. B. P.* 346. Horseshoe Vetch with many Pods.

The 1st Sort grows naturally in *Italy* and *Spain*. This is an annual Plant, which sends from the Root several trailing Stalks a Foot long, that divide upward into smaller Branches, garnished with winged Leaves, composed of 4 or 5 Pair of small Lobes, terminated by an odd

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odd one; these are obtuse, and indented at their Ends; from the Wings of the Stalk, come out single Flowers of the Butterfly Kind, which are yellow, and are succeeded by single Pods sitting close to the Stalks, about 2 Inches long, and a third of an Inch broad, bending inward like a Sickle, and divided into many Joints shaped like a Horseshoe. This flowers in June and July, and the Seeds ripen in Autumn, soon after which the Plants decay.

The 2d Sort is found growing naturally in some Parts of England, upon chalky Hills; this is a smaller Plant than the former, and hath a perennial Root, sending out slender trailing Stalks about 6 Inches long, garnished with narrow winged Leaves; the Flowers grow in Clusters on the Top of long Foot Stalks; these are succeeded by Pods which are shorter, and twisted inward in roundish Curves, but have Joints shaped like those of the former Sort.

The 3d Sort grows naturally in the South of France, Germany, and Italy. This is an annual Plant with trailing Stalks, greatly resembling the first, but the Flowers are produced in Clusters on the Top of pretty long Foot Stalks; they are shaped like those of the other Sorts, and the Pods are jointed in like Manner, but the Joints are fixed to the opposite Border. These Plants flower in June and July, and the Seeds ripen in August and September.

These Plants are propagated by Seeds, which should be sown in Autum, where the Plants are designed to remain; and when the Plants come up, they must be kept clean from Weeds, and thinned where too close, which is all the Culture they require. The two annual Sorts will decay in the Autumn, after they have perfected their Seeds, but the Roots of the other will continue two or three Years, provided they are not in too good Ground.

HIPPOLAPATHUM. See Rumex.

HIPPOMANE. Lin. Gen. Pl. 1099. *Manzanilla*. Plum. Nov. Gen. 50. Tab. 30. The Manchineel.

The Characters are,

It hath male and female Flowers in the same Spike, the male Flowers come out in small Clusters, from a short Cup-shaped Empalement; these have no Petals; from the Center of each Empalement arises a single Style, terminated by 4 Summits. The female Flowers have no Petal, but an oval Germen wrapped up in a 3 leaved Empalement, supporting a short Style, crowned by a concave Stigma. The Germen becomes a roundish Fruit with a fleshy Cover, inclosing a rough hard Shell with several Cells, each inclosing 1 oblong Seed.

The Species are,

1. **HIPPOMANE foliis ovatis serratis.** Hort. Cliff. 484. *Hippomane* with oval sawed Leaves. *Manzanilla pyri facie*. Plum. Nov. Gen. 50. Manchineel with the Appearance of the Pear Tree.

2. **HIPPOMANE foliis ovato-oblongis serratis, basi glandulosis.** Lin. Sp. Plant. 1191. *Hippomane* with oval oblong Leaves which are sawed, and have Glands at their Base. *Manzanilla lauri foliis oblongis*. Plum. Nov. Gen. 50. Manchineel with oblong Bay Leaves.

3. **HIPPOMANE foliis subovatis dentato-spinosis.** Lin. Gen. Plant. 1191. *Hippomane* with oval Leaves, which

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have prickly Indentures. *Manzanilla aquifolii foliis*. Plum. Nov. Gen. 50. Manchineel with Holly Leaves.

The 1st Sort grows naturally in all the Islands of the West-Indies. This is a very large Tree in its native Soil, almost equalling the Oak in Size; the Wood is much esteemed for making Cabinets, Book Cases, &c. being very durable, and taking a fine Polish; it is also said, that the Worms will not eat it: But as the Trees abound with a milky caustick Juice, so before they are felled, they make Fires round their Trunks to burn out their Juice, otherwise those who fell them, would be in Danger of losing their Sight, by the Juice flying in their Eyes; and where-ever this falls on the Skin, it will raise Blisters; and if it comes upon Linen, it will immediately turn it black, and on being washed will come in Holes: It is also dangerous to work the Wood after it is sawn out, for if any of the Saw Dust happens to get into the Workmens Eyes, it causes Inflammations, and the Loss of Sight for some Time; to prevent which, they generally cover their Faces with fine Lawn, during the Time they are working it.

This Tree hath a smooth brownish Bark, the Trunk divides upward into many Branches, garnished with oblong Leaves, about 3 Inches long, and 1 Inch and a Half broad, ending in acute Points, they are slightly sawed on their Edges, and are of a lucid green, standing on short Foot Stalks. The Flowers come out in short Spikes at the End of the Branches, being of both Sexes in the same Spike, but having no Petals, they make but little Appearance; these are succeeded by Fruit, about the Size, and of the same Shape as the Golden Pippin, turning of a yellow Colour when ripe, which has often tempted Strangers to eat of them to their Cost, for they inflame the Mouth and Throat to a great Degree, causing violent Pains in the Throat and Stomach, which is dangerous, unless Remedies are timely applied.

The Inhabitants of America believe it is dangerous to sit or lie under these Trees, and affirm, that the Rain, or Dew, which falls from the Leaves, will raise Blisters, but it is very certain, that unless the Leaves are broken, and the Juice of them mix with the Rain, it will do no Injury.

The 2d Sort grows naturally at Carthage, in New Spain, and the 3d at Campeachy, from which Places the late Dr. Housfoun sent me their Seeds. The 2d Sort grows to as large a Size as the 1st. The Leaves are much longer than those of the 1st, and have 2 small Glandules growing at their Base, they are sawed on their Edges, and are of a lucid green.

The 3d Sort is of humbler Growth, seldom rising more than 20 Feet high; the Leaves of this greatly resemble those of the common Holly, and are set with sharp Prickles at the End of each Indenture, they are of a lucid green, and continue all the Year.

These Plants are preserved in some of the curious Gardens in Europe, where they can never be expected to rise to any great Height, for they are too tender to live in these Northern Countries, but in Stoves; they rise easily from Seeds, provided they are good. The Seeds must be sown on a good hot Bed, and when the Plants come up, they should be each planted in a small separate Pot filled with light sandy Earth, and plunged into a

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good Bed of Tanners Bark, treating them as other tender Plants, but they must not have much Wet, for these Plants abound with an acrid milky Juice, and it is certain that most Plants which do, are soon killed by much Moisture; these Plants must be removed into the Stove, and plunged into the Tan Bed in Autumn, where they should constantly remain, giving them very little Water in Winter, and in Summer when the Weather is warm, they should have a good Share of Air admitted to them, and once or twice a Week refreshed with Water; by this Management I have raised many of these Plants to the Height of 5 or 6 Feet, which have by their shining green Leaves, made a pretty Variety during the Winter Season in the Stove.

HIPPOPHAE. *Lin. Gen. Pl. 980. Rhamnoides. Tourn. Cor. 52. Tab. 481. Bastard Rhamnus, or Sea Buckthorn.*

The Characters are,

It is male and female in different Plants, the male Flowers have an Empalement of 1 Leaf, cut into 2 Parts, which close at their Points, they have no Petals, but have 4 short Stamina, terminated by oblong angular Summits, which are equal to the Empalement. The female Flowers have no Petals, but a 1 leaved Empalement, which is oval, oblong, tubulous, and bifid at the Brim; these have no Stamina, but in the Center is situated a small roundish Germen, with a short Style, crowned by an oblong thick Stigma, twice the Length of the Empalement. The Germen turns to a globular Berry with 1 Cell, inclosing 1 roundish Seed.

The Species are,

1. **HIPPOPHAE foliis lanceolatis.** *Lin. Sp. Pl. 1023. Hippophae with Spear-shaped Leaves. Rhamnoides foliis folio. Tourn. Cor. 53. Sea Buckthorn with a Willow Leaf.*

2. **HIPPOPHAE foliis ovatis.** *Lin. Sp. Pl. 1024. Hippophae with oval Leaves, called Canada Sea Buckthorn.*

The 1st Sort grows naturally on the Sea Banks in *Lincolnshire*, and also on the Sand Banks between *Sandwich and Deal*, in *Kent*; there are two Varieties of this, one with yellow, and the other red, with red Fruit, but it is the first only which I have observed growing naturally in *England*, the other I saw growing on the Sand Banks in *Holland*.

These rise with shrubby Stalks, 8 or 10 Feet high, sending out many irregular Branches, which have a brown Bark silvered over, garnished with very narrow Spear-shaped Leaves, about 2 Inches long, and a Quarter of an Inch broad in the Middle, lessening gradually to both Ends, of a dark green on their upper Side, but hoary on their under, having a prominent Mid-rib; the two Borders of the Leaves are reflexed like the *Rosemary*; these are placed alternate on every Side the Branches, sitting very close. The Flowers come out from the Side of the younger Branches, to which they sit very close. The male Flowers growing in small Clusters, but the female come out singly; these make but little Appearance. They appear in *July*, and the Berries on the female Plants are ripe in *Autumn*.

This Sort is easily propagated by Suckers from the Root, for the Roots spread wide, and send up a great Number of Shoots, so as to form a Thicket; if these are taken off in *Autumn*, and transplanted into a Nursery, they will be fit to transplant after one Year's Growth,

to the Places where they are to remain; as there is little Beauty in this Plant, so 1 or 2 of them may be allowed a Place in a Plantation of Shrubs for Variety.

The 2d Sort grows naturally in *North America*; this hath much the Appearance of the former Sort, but the Leaves differ in their Shape, these being much shorter and broader, and not so white on their under Side. This hath not as yet flowered in this Country, but the Plants seem equally hardy with the former, and may be easily propagated by Suckers or Layers.

HIPPOSELINUM. See *Smyrniun*.

HIRUNDINARIA. See *Afclepias*.

HOLCUS. *Lin. Gen. Pl. 1015. Milium. Tourn. Inf. R. H. 514. Tab. 298. Sorgum. Mich. Indian Millet, or Corn.*

The Characters are,

It hath male and hermaphrodite Flowers on the same Plant. The male Flowers are small, and have a bivalve Chaff; these Valves are oval, Spear-shaped, and twisted, ending with an acute Beard; they have neither Petals, or any proper Empalement, but 3 hairy Stamina, terminated by oblong Summits. The hermaphrodite Flowers are single, in a stiff bivalve Chaff; the inner of these is slender, hairy, and less than the Empalement, the outer Valve terminates in a rigid Beard, and is larger than the Empalement; they have 3 hairy Stamina, terminated by oblong Summits, with a roundish Germen, supporting 2 hairy Styles, crowned with plumose Summits. The Germen becomes an oval single Seed wrapped up in the Chaff.

The Species are,

1. **HOLCUS glumis villosis, seminibus aristatis.** *Hort. Ups. 301. Holcus with hairy Chaff, and bearded Seeds. Milium arundinaceum, subrotundo semine, sorgo nominatum. C. B. P. 26. Reed-like Millet with a roundish Seed called Sorgum.*

2. **HOLCUS glumis glabris, seminibus muticis.** *Lin. Sp. Pl. 1047. Holcus with smooth Husks, and Seeds without Awns. Milium Indicum, arundinaceo caule, granis flavescentibus. H. L. 425. Indian Millet with a Reedy Stalk, and yellowish Grains.*

There are several other of the grassy Tribe which belong to this Genus, but as they are not cultivated for Use, I shall not enumerate them here.

The 2 Sorts here mentioned, grow naturally in *India*, where their Grain is often used to feed Poultry, and the Seeds are frequently sent to *Europe* for the same Purpose, but the Summers are seldom warm enough to ripen the Seeds in the open Air. The Stalks of these Plants rise 5 or 6 Feet high, with strong reedy Stalks, like those of the *Maiz*, or *Turkey Wheat*. The Leaves are long and broad, having a deep Furrow through the Center of the Leaf, where the Mid-rib is depressed on the upper Surface, and is very prominent below. The Leaves are 2 Feet and a Half long, and 3 Inches broad in the Middle, embracing the Stalks with their Base. The Flowers come out in large Panicles at the Top of the Stalks, resembling, at first Appearance, the male Spikes of the *Turkey Wheat*; these are succeeded by large roundish Seeds, wrapped round with the Chaff.

These Plants are propagated in a few Gardens for Variety, but as they are late in ripening their Grain here, they are not worth cultivating for Use. The Seeds should be sown on a warm Border the Beginning of *April*,

April, and when the Plants come up, they should be thinned to the Distance of a Foot asunder in the Rows, and the Rows should be 3 Feet Distance; the Culture after this, is to keep the Ground clean from Weeds, and draw the Earth up with a Hoe to the Stems of the Plants; if the Season proves warm, their Panicles will appear in *July*, and the Grain will ripen in *September*, but in bad Seasons their Grain will not ripen here.

HOLLOW ROOT. See *Fumaria*.

HOLLY. See *Ilex*.

HOLLYHOCKS. See *Alcea*.

HOMOGENEAL or HOMOGENEOUS Plants are such Plants as are of the same Kind, or Nature, with others.

HONEYSUCKLE. See *Periclymenum*.

HOPS. See *Lupulus*.

HORDEUM. *Lin. Gen. Pl. 94. Tourn. Inst. R. H. 313. Tab. 293.* Barley; in *French*, *Orge*.

The Characters are,

It hath a partial Involucrum of 6 narrow pointed Leaves, which contains 3 Flowers. The Petal of the Flower opens with 2 Valves, the under Valve is angular, swelling, oval, and pointed, being longer than the Em-polement, ending in a long Beard, the inner is small and Spear-shaped. The Flower hath 3 hairy Stamina shorter than the Petal, terminated by oblong Summits. It hath an oval turned Germen, supporting 2 hairy reflexed Styles, crowned by the like Stigmas. The Germen becomes an oblong bellied Seed, pointed at both Ends, having a longitudinal Furrow, surrounded by the Petal of the Flower, which does not fall off.

The Species are,

1. **HORDEUM flosculis omnibus hermaphroditis aristatis ordinibus duobus erectioribus.** *Lin. Sp. Pl. 84.* Barley with all the Flowers hermaphrodite, and 2 Orders of Beards, which are erect. *Hordeum polysicon vernum. C. B. P. 22.* Spring Barley with many Rows of Grain.

2. **HORDEUM flosculis lateralibus masculis muticis, seminibus angularibus imbricatis.** *Hort. Upsal. 23.* Barley with male Flowers on the Side, without Awns, and angular Seeds placed over each other. *Hordeum distichon. C. B. P. 22.* Common long eared Barley.

3. **HORDEUM flosculis lateralibus masculis muticis, seminibus angularibus patentibus corticatis.** *Hort. Upsal. 23.* Barley with male Flowers on the Side, without Awns, and angular spreading Seeds with Husks. *Hordeum distichum, spica brevior & latior, granis confertis. Raii. Syn. 246.* Barley with shorter and broader Spikes, commonly called Sprat, or Battledore Barley.

4. **HORDEUM flosculis omnibus hermaphroditis aristatis, seminibus sexfariam aequaliter positis.** *Hort. Upsal. 23.* Barley with all the Flowers hermaphrodite and bearded, and 6 Rows of Seeds equally ranged. *Hordeum hexastichum pulchrum. J. B. 2. 429.* Winter, or Square Barley, Bear Barley, or Big.

The 1st Sort is the common Spring Barley, cultivated in *England*, of this the Farmers make two Sorts, viz. the common and Rath-ripe Barley, which are the same; for the Rath-ripe has only been an Alteration occasioned by being long cultivated upon warm gravelly Lands. The Seeds of this, when sown in Cold, or strong Land, will, the first Year, ripen near a Fortnight earlier than the Seeds taken from strong Land, therefore the Far-

mers in the Vales, generally purchase their Seed Barley from the warm Land, for if sowed in the Vales 2 or 3 Years, it will become full as late in ripening as the common Barley of their own Product, and the Farmers on the warm Land are also obliged to procure their Seed Barley from the strong Land, otherwise their Grain would degenerate in Bulk and Fullness, which by thus changing is prevented. This Sort of Barley is easily distinguished by the two Orders of Beards, or Awns, which stand erect; the Chaff is also thinner than that of the two last Species, so is esteemed better for malting.

The 2d Sort is the long eared Barley, cultivated in many Parts of *England*, and is an exceeding good Sort, but some Farmers object to it, because they say the Ears being long and heavy, it is more apt to lodge; this hath the Grains regularly ranged in a double Row, lying over each other like Tiles on a House, or the Scales of Fishes. The Husk, or Chaff of this Barley is also very thin, so is much esteemed for malting.

The 3d Sort is usually called Sprat Barley; this hath shorter and broader Ears than either of the other Sorts; the Awns, or Beards, are longer, and the Grains are placed closer together, and the Awns being long, the Birds cannot so easily get out the Grains; this seldom grows so tall as the other Species, the Straw is shorter and coarser, so not very good Fodder for Cattle.

The 4th Sort is rarely cultivated in the Southern Parts of *England*, but in the Northern Counties, and in *Scotland* is generally sown, being much harder than the other Species, so will bear the Cold; this hath its Grains disposed in 6 Rows; the Grain is large and plump, but is not so good for malting, which is the Reason it is not cultivated in the Southern Parts of *England*, where the other Sorts which are much better for that Purpose thrive well.

All these Sorts of Barley are sown in the Spring of the Year, in a dry Time; in some very dry light Land, the Barley is sown early in *March*, but, in strong clayey Soils, it is not sown till *April*, and sometimes not until the Beginning of *May*, but when it is sown so late, if the Season doth not prove very favourable, it is very late in Autumn before it is fit to mow, unless it be the Rath-ripe Sort, which is often ripe in 9 Weeks from the Time of sowing.

Some People sow Barley on Land where Wheat grew the former Year, but when this is practised, the Ground should be ploughed the Beginning of *October* in a dry Time, laying it in small Ridges, that the Frost may mellow it the better, and this will improve the Land greatly; and if this can be ploughed again in *January*, or the Beginning of *February*, it will break and prepare the Ground better; then in *March* the Ground is ploughed again, and laid even where it is not very wet; but in strong wet Lands the Ground should be laid round, and the Furrows made deep to receive the Wet. When this is finished, the common Method is to sow the Barley Seed with a broad Cast at two Sowings; the first being harrowed in once, the second is harrowed until the Seed is buried; the common Allowance of Seed is 4 Bushels to an Acre.

This is the Quantity of Grain usually sown by the Farmers, but if they could be prevailed on to alter this Practice, they would soon find their Account in it, for

if less than half that Quantity is sown, there will be a much greater Produce, and the Corn will be less liable to lodge, as I have many Years experienced; for when Corn or any other Vegetable stands very close, the Stalks are drawn up weak, so are incapable to resist the Force of Winds, or bear up under heavy Rains, but when they are at a proper Distance, their Stalks will be more than twice the Size of the other, so are seldom laid. I have frequently observed in Fields where there has been a Foot Path through their Middle, that the Corn which has stood thin on each Side the Path hath stood upright, when all the rest on both Sides has been laid flat on the Ground; and whoever will observe these Roots of Corn near the Paths, will find them tiller out (*i. e.* have a greater Number of Stalks) to more than 4 Times the Quantity of the other Parts of the Field. I have seen Experiments made by sowing Barley in Rows across divers Parts of the same Field, and the Grains sowed thin in the Rows, so that the Roots were 3 or 4 Inches asunder in the Rows, and the Rows a Foot Distance; the intermediate Spaces of the same Field were at the same Time sown broad Cast in the usual Way; the Success was this, the Roots which stood thin in the Rows tillered out from 10 or 12, to upward of 30 Stalks on each Root, the Stalks were stronger, the Ears longer, and the Grains larger than any of those sown in the common Way; and when those Parts of the Field where the Corn sown in the usual Way has been lodged, these Parts sown thin have supported their upright Position against Wind and Rain, though the Rows have been made not only Lengthways, but cross the Lands, in several Positions, so that there could be no Alteration in Regard to the Goodness of the Land, or the Situation of the Corn; therefore where such Experiments have been frequently made, and always attended with equal Success, there can be no Room to doubt which of the two Methods is more eligible, since if the Crops were only supposed to be equal in both, the saving more than half the Corn sown, is a very great Advantage, and deserves a national Consideration, as such a Saving, in scarce Times, might be a very great Benefit to the Publick.

I know the Farmers in general are very apt to complain if their Corn does not come up so thick as to cover the Ground green in a short Time, like Grass Fields, but I have often observed, that from the Badness of the Season it has come up thin, or by Accident has been in Part killed, their Corn has been stronger, the Ears longer, and the Grain plumper, so that the Produce has been much greater than in those Years when it has come up thick; for the natural Growth of Corn is to send out many Stalks from a Root, and not rise so much in Height, therefore it is entirely owing to the Roots standing too near each other, when the Stalks are drawn up tall and weak. I have had 86 Stalks upon one Root of Barley, which were strong, produced longer Ears, and the Grain was better filled than any which I ever saw grow in the common Method of Husbandry, and the Land upon which this grew was not very rich; but I have frequently observed on the Sides of hot Beds in the Kitchen Gardens, where Barley Straw has been used for covering the Beds, that some of the Grains left in the Ears has dropped out and

grown, the Roots have produced from 30 to 60 Stalks each, and those have been three or four Times larger than the Stalks ever arrive at in the common Way: But to this I know it will be objected, that although upon rich Land in a Garden, these Roots of Corn may probably have so many Stalks, yet in poor Land they will not have such Produce, therefore unless there is a greater Quantity of Seeds sown, their Crop will not be worth standing, which is one of the greatest Fallacies that can be imagined; for to suppose that poor Land can nourish more than twice the Number of Roots in the same Space as rich Land, is such an Absurdity, as one could hardly suppose any Person of common Understanding guilty of, and yet so it is, for the general Practice is to allow a greater Quantity of Seed to poor Land, than for richer Ground, not considering that where the Roots stand so close, they will deprive each other of the Nourishment, so starve themselves, which is always the Case where the Roots stand close, which any Person may at first Sight observe in any Part of the Fields where the Corn happens to scatter when they are sowing it; or in Places, where, by harrowing, the Seed is drawn in Heaps, those Patches will starve, and never grow to a third Part of the Size as the other Parts of the same Field, and yet common as this is, it is little noticed by Farmers, otherwise they surely would not continue their old Custom of sowing. I have made many Experiments for several Years in the poorest Land, and have always found that all Crops sown or planted at a greater Distance than usual have succeeded best; and I am convinced if the Farmers could be prevailed on to quit their Prejudices, and make Trial of this Method of sowing their Corn thin, they would soon see the Advantage of this Husbandry.

The Noblemen and Gentlemen in *France* are very busy in setting Examples of this Husbandry in most of their Provinces, being convinced by many Trials of its great Utility, and it were to be wished the same was done in *England*.

When the Barley is sown, the Ground should be rolled after the first Shower of Rain, to break the Clods and lay the Earth smooth; which will render it better to mow, and also cause the Earth to lie closer to the Roots of the Corn, which will be of great Service to it in dry Weather.

Where Barley is sown upon new broken up Land, the usual Method is, to plough up the Land in *March*, and let it lie fallow until *June*, at which Time it is ploughed again, and sown with Turneps, which are eaten by Sheep in Winter, by whose Dung the Land is greatly improved, and then in *March* following the Ground is ploughed again, and sown with Barley as before.

There are many People who sow Clover with their Barley, and some have sown the Lucern with Barley; but neither of these Methods is to be commended, for where there is a good Crop of Barley, the Clover or Lucern must be so weak as not to pay for standing, so that the better way is to sow the Barley alone without any other Crop among it, and then the Land will be at Liberty for any other Crop, when the Barley is taken off the Ground; but this practice of sowing Clover, Rye Grass, and other Grass Seeds, with Corn, has been

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so long and universally established among Farmers, that there is little Hope of prevailing with those People to alter a Custom which has been handed down to them from their Predecessors, although there should be many Examples produced, to shew the Absurdity of it.

When the Barley has been up 3 Weeks or a Month, it will be a very good Method to roll it over with a weighty Roller, which will press the Earth close to the Roots of the Corn, and thereby prevent the Sun and Air from penetrating the Ground, which will be of singular Service in dry Seasons; and this rolling of it before it stalks, will cause it to till out into a greater Number of Stalks; so that if the Plants should be thin, this will cause them to spread so as to fill the Ground, and likewise strengthen the Stalks.

The Time for cutting Barley is, when the red Colour of the Ears is off, and the Straw turns yellow, and the Ears begin to hang down: In the North of England they always reap their Barley, and make it up in Sheaves, as is practised here for Wheat, by which Method they do not lose near so much Corn, and it is also more handy to stack; but this Method cannot so well be practised where there are many Weeds amongst the Corn, which is too frequently the Case in the rich Lands near London, especially in moist Seasons; therefore when this is the Case, the Barley must lie on the Sward till all the Weeds are dead; but as it is apt to sprout in wet Weather, it must be shook up, and turned every fair Day after Rain to prevent it. When it is carried, it should be thoroughly dry, for if stacked wet, it will turn musty; or if too green, it is subject to burn in the Mow. The common Produce of Barley, is two and a Half, or three Quarters on an Acre, but I have sometimes known 6 or 7 Quarters on an Acre.

HORIZONTAL SHELTERS have, by some Persons, been greatly recommended to preserve Fruit Trees from Blights; but with how little Reason, or upon what slight Experiments, every one who has ever made Use of them, will easily judge; especially those which are contrived by placing Tiles in the Wall at certain Distances, nothing being more obvious, than that Vegetables, when prevented from receiving the Advantage of Dews, Rains, &c. those kindly Benefits of Heaven, grow weak, languid, and at last entirely decay: And since, from vast Numbers of Experiments which have been lately made, we find the Trees imbibe great Quantities of Nourishment through the Pores of their Leaves and Branches, whereby they are rendered vigorous and healthy, even in such Seasons, and upon such Soils, where one would think it impossible they should receive much Nourishment from the Earth; to deprive them of this Advantage, is no less than destroying them; though perhaps, if the Trees are vigorous, it may not be effected suddenly; but there will be very visible Signs of Decay on them daily, and a few Years will put a Period to their Lives, as I have more than once observed, where such Walls were built.

The only Sort of these Shelters which I have ever observed useful for Fruit Trees, was made with 2 Leaves of slit Deal, joined over each other, and painted; this being fixed upon the Top of the Wall with Pullies, to draw up and down at Pleasure, formed a Sort of Penthouse; which being let down in great Rains, or cold

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Nights, during the Time that the Trees were in flower, or the Fruit was setting, proved serviceable; but then these Shelters were removed away soon after the Fruit was set, so that the Trees might enjoy all the Advantages of Rain, Dew, &c. in the Summer, which is absolutely necessary, if we would have healthy Trees or good Fruit.

HORMINUM. Tourn. Inst. R. H. 178. Tab. 82. *Salvia.* Lin. Gen. Pl. 36. Clary; in French, *Ormin.*

The Characters are,

The Empalement of the Flower is permanent, of 1 Leaf, tubulous, and channelled, having 2 Lips; the upper is broad, ending in 3 acute Points; the under is shorter, ending in 2 Points. The Flower has 1 Petal, divided into 2 Lips; the upper is concave, compressed on the 2 Sides, and incurved with a slight Indenture at the Point, the lower is broader and more indented. It hath 2 short Stamina situated in the Tube of the Flower, terminated by short prostrate Summits. In the Bottom of the Tube are 4 roundish Germina supporting a single Style crowned by a bifid Stigma, situated in the upper Lip of the Petal. The Germina become 4 Seeds, lodged in the Empalement.

The Species are,

1. **HORMINUM foliis sinuatis obtusis crenatis, calycibus acutis.** Clary with blunt sinuated Leaves crenated, and the Empalement ending in acute Points. *Horminum sylvestre lavendulae flore.* C. B. P. 239. Wild Clary with a Lavender Flower.

2. **HORMINUM foliis pinnato-sinuatis rugosis, calycibus corollâ longioribus.** Clary with Wing-shaped, sinuated Leaves which are rough, and the Empalements longer than the Petal of the Flower. *Horminum folio querno.* Volk. Oak-leaved Clary.

3. **HORMINUM foliis cordatis crenato-dentatis, verticillis subnudis, stylo corollarum labio inferiore incumbente.** Clary with Heart-shaped, crenated, indented Leaves, naked Whorls, and the Style lying upon the under Lip of the Petal. *Horminum sylvestre latifolium verticillatum.* C. B. P. 283. Broad Leaved wild Clary, with Flowers growing in Whorls.

4. **HORMINUM foliis radicalibus pinnato-incisis, caulibus cordatis crenatis, summis semiamplexicaulibus.** Clary with lower Leaves cut and winged, those on the Stalks Heart-shaped and crenated, and those on the Top half embracing the Stalks. *Horminum napi folio.* Mor. Hort. R. Blæff. Clary with a Navev Leaf.

5. **HORMINUM foliis obtusis crenatis, bracteis summis sterilibus majoribus coloratis.** Clary with obtuse crenated Leaves, and the Bractææ on the Top of the Stalks large, coloured, and barren. *Horminum comâ purpureo-violacea.* J. B. 3. 309. Clary with a purple-violet Top.

The 1st Sort grows naturally on sandy and gravelly Grounds, in many Parts of England. This is a perennial Plant, the lower Leaves grow on pretty long Foot Stalks, and are near 4 Inches long and 2 broad; they are sinuated on their Borders, and bluntly crenated, their Surface is rugged and wrinkled; the Stalks are a Foot long, square, and inclining toward the Ground; the Leaves upon these are smaller, and crenated on their Edges; the Flowers grow in a whorled Spike at the Top of the Stalk, generally with 2 shorter Spikes, 1 on each Side; the Flowers are small and blue; these are

are scarce so long as their Empalements; they have but 1 Petal, divided into 2 Lips, the upper being a little longer than the under, and almost shuts over it; there are but 2 Stamina in each Flower, and 4 Germina at the Bottom, supporting a single Style; the Germina afterward become so many naked Seeds, sitting in the Empalement. It flowers in *June* and *July*, and the Seeds ripen in *August* and *September*. This Sort propagates itself in Plenty, if the Seeds are permitted to scatter, and requires no Culture but to keep the Plants clean from Weeds.

This is sometimes called *Oculus Christi*, from the supposed Virtues of its Seeds in clearing the Sight, which it does by its viscous Covering; for when any Thing happens to fall into the Eye, if one of the Seeds is put in at one Corner, and the Eye-lid kept close over it, moving the Seed gently along the Eye, whatever happens to be there will stick to the Seed, and so may be brought out. The Virtues of this are supposed to be the same as the Garden Clary, but not quite so powerful.

The 2d Sort grows naturally in the South of *France* and *Italy*, the lower Leaves are upward of 4 Inches long, and not more than 1 broad, regularly sinuated on both Sides, in Form of a winged Leaf; the Stalks rise about the same Height with the former, but all the Leaves on the Stalks are sinuated in the same Manner as the lower; the Flowers are smaller than those of the first, but grow in whorled Spikes like them. This is a perennial Plant, is very hardy, and will propagate in Plenty by its scattered Seeds. It is seldom kept in Gardens, but for Variety.

The 3d Sort is a perennial Plant, which grows naturally in *Austria* and *Bohemia*. This sends out from the Root a great Number of Heart-shaped Leaves, sawed on their Edges and deeply veined, standing on pretty long Foot Stalks which are hairy; the Stalks rise from between these, are square, and grow 2 Feet and a Half high, garnished with 2 Heart-shaped Leaves at each Joint, whose Base fits close to the Stalks, half embracing them; the Stalks at the two or three upper Joints, put out on each Side a long Foot Stalk; these, and also the principal Stalk, are garnished with Whorls of small blue Flowers, not much unlike those of the common Sort, but larger; the Spikes are more than a Foot long, and toward the Top the Whorls are nearer together. It flowers in *June*, and the Seeds ripen in *August*.

The 4th Sort grows naturally in the South of *France*, and in *Italy*. This is also a perennial Plant, which has some Resemblance of the 3d, but the lower Leaves are cut at their Base to the Mid-rib, into 1 or 2 Pair of Ears or Lobes, which are but small, and are often at a Distance from each other; the Leaves are not sawed, but bluntly indented; the Stalks are slenderer, and do not grow so tall as those of the third, nor are the Spikes of Flowers so long. This flowers and Seeds at the same Time with the third.

Both Sorts may be easily propagated by Seeds, which, if sown in the Spring on an open Spot of Ground, the Plants will come up, and require no other Care but to keep them clean from Weeds, and allow them Room to grow; for they should not be nearer than 2 Feet

apart, for they grow very large, and will last several Years.

The 5th Sort is an annual Plant, which grows naturally in *Spain*; of this there are 3 Varieties which are constant, one with purple Tops, another with red Tops, and a third with green Tops. As they differ in nothing but the Colour of their Bractææ on the Top of the Stalks, I have not put them down as different Species, though from more than 30 Years cultivating them, I have not known them alter.

These Plants have obtuse crenated Leaves, shaped like those of the common red Sage; the Stalks are square and grow erect, about a Foot and a Half high; their lower Parts are garnished at each Joint, with 2 opposite Leaves of the same Shape, but gradually diminishing in Size toward the Top: The Stalks are garnished upward with Whorls of small Flowers, and are terminated by Clusters of small Leaves, which in one are red, in another blue, and a third green, which make a pretty Appearance, and are preserved in Gardens for Ornament. They flower in *June* and *July*, and their Seeds ripen in the Autumn.

The Seeds of these are sown in the Spring, in the Places where they are designed to remain, and require no other Care but to keep them clean from Weeds, and thin them where too close.

Garden Clary. See *Sclarea*.

HORNBEAM. See *Carpinus*.

HORSE CHESTNUT. See *Hippocastanum*.

HORSE DUNG is of great Use to make hot Beds for raising all Sorts of early Garden Crops, as Cucumbers, Melons, Asparagus, Sallading, &c. for which Purpose no other Sort of Dung will do so well, this fermenting the strongest; and, if mixed with long Litter, and Sea Coal Ashes in due Proportion, will continue its heat much longer than any other Sort of Dung whatsoever; and afterwards when rotted, becomes an excellent Manure for most Sorts of Lands, more especially for such as are of a cold Nature; and for stiff clayey Lands, when mixed with Sea Coal Ashes, and the Cleanings of *London* Streets, it will cause the Parts to separate much sooner than any other Compost will do; so that where it can be obtained in Plenty, I would always recommend the Use of it for such Lands.

HOSE IN HOSE, a Term used in Gardening, to signify one Tube or Petal within another, as in the *Polyanthos*, where there are in some Varieties 2 Petals.

HOT BEDS are of general Use in these Northern Parts of *Europe*, without which we could not enjoy so many of the Products of warmer Climes as we do now; nor could we have the Tables furnished with the several Products of the Garden, during the Winter and Spring Months, as they are at present in most Parts of *England*, better than in any other Country in *Europe*, for although we cannot boast of the Clemency of our Climate, yet *England* is better furnished with all Sorts of esculent Plants for the Table, much earlier in the Season, and in greater Quantities, than any of our Neighbours, which is owing to our Skill in hot Beds.

The ordinary hot Beds used in Kitchen Gardens, are made with new Horse Dung, in the following Manner:

1st, There is a Quantity of new Horse Dung from the Stable (in which there should be Part of the Litter

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ter or Straw which is commonly used in the Stable, but not in too great Proportion to the Dung,) the Quantity must be according to the Length of the Bed intended: which, if early in the Year, should not be less than one good Load for each Light; this Dung should be thrown up in a Heap, mixing therewith a few Sea Coal Ashes, which will be of Service to continue the Heat of the Dung; it should remain 6 or 7 Days in this Heap, then it should be turned over, and the Parts well mixed together, and cast into a Heap again, where it may continue 5 or 6 Days longer, by which Time it will have acquired a due Heat; then in some well sheltered Part of the Garden, you must dig out a Trench in Length and Width, proportioned to the Frames you intend it for; and if the Ground be dry, about a Foot or a Foot and a Half deep; but if wet, not above 6 Inches; then wheel the Dung into the Opening, observing to stir every Part of it with a Fork; and lay it exactly even and smooth through every Part of the Bed; also lay the Bottom Part of the Heap (which is commonly free from Litter) upon the Surface of the Bed; this will prevent the Steam from rising so plentifully as it would otherwise do. To prevent this, and the Heat from rising so violently as to burn the Roots of whatever Plants are put into the Ground, it will be a very good Way to spread a Layer of Neats Dung all over the Surface of the Horse Dung, which will prevent the Mold from burning: If the Bed is intended for Cucumbers or Melons, the Earth should not be laid all over the Bed at first, only a Hill of Earth should be first laid in the Middle of each Light on which the Plants should be planted, and the remaining Space should be filled up from Time to Time as the Roots of the Plants spread, but this is fully explained under those two Articles. But if the hot Bed is intended for other Plants, then after the Bed is well prepared, it should be left two or three Days for the Steam to pass, before the Earth is laid upon the Dung.

In making these hot Beds, it must be carefully observed to settle the Dung close with a Fork; and if it be pretty full of long Litter, it should be equally trod down close in every Part, otherwise it will be subject to heat too violently, and consequently the Heat will be much sooner spent, which is one of the greatest Dangers these Sort of Beds may be liable to. During the first Week or ten Days after the Bed is made, you should cover the Glasses but slightly in the Night, and in the Day Time carefully raise them to let out the Steam, which is subject to rise very copiously while the Dung is fresh; but as the Heat abates, the Covering should be increased; otherwise the Plants in the Beds will be stunted in their Growth, if not entirely destroyed. In order to remedy this Evil, if the Bed be very cold, you must put a pretty good Quantity of new hot Dung round the Sides of it, which will add a fresh Heat thereto, and cause it to continue a considerable Time after; and as the Spring advances, the Sun will supply the Loss of the Dung's Heat; but then it will be advisable to lay some Mowings of Grass round the Sides of the Bed, especially if the Nights should prove cold, as it often happens in May, which is many Times, even at that Season, very hurtful to tender Plants on hot Beds.

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But although the hot Bed I have described is what the Kitchen Gardeners commonly use, yet those made with Tanners Bark are much preferable, especially for all tender exotick Plants or Fruits, which require an even Degree of Warmth to be continued for several Months, which is what cannot be effected by Horse Dung. The Manner of making these Beds is as follows:

There must be a Trench dug in the Earth about 3 Feet deep, if the Ground be dry; but if wet, not be above a Foot or 6 Inches deep at most, and must be raised in Proportion above Ground, so as to admit of the Tan being laid 3 Feet thick. The Length must be proportioned to the Frames intended to cover it, but that should never be less than 11 or 12 Feet, and the Width not less than 6, which is but a sufficient Body to continue the Heat. This Trench should be bricked up round the Sides to the above-mentioned Height of 3 Feet, and should be filled in the Spring with fresh Tanners Bark, (*i. e.* such as the Tanners have lately drawn out of their Vats, after they have used it for tanning Leather) which should be laid in a round Heap for a Week or ten Days before it is put into the Trench, that the Moisture may the better drain out of it, which, if detained in too great a Quantity, will prevent its Fermentation; then put it into the Trench, and gently beat it down equally with a Dung Fork; but it must not be trodden, which would also prevent its heating, by settling it too close; then you must put on the Frame over the Bed, covering it with the Glasses, and in about 10 Days or a Fortnight it will begin to heat; at which Time you may plunge your Pots of Plants or Seeds into it, observing not to tread down the Bark in doing of it.

A Bed thus prepared (if the Bark be new and not ground too small) will continue in a good Temper of Warmth for 2 or 3 Months; and when you find the Heat decline, if you stir up the Bark again pretty deep, and mix a Load or two of fresh Bark among it, it will cause it to heat again, and preserve its Warmth 2 or 3 Months longer. There are many People who lay some hot Horse Dung in the Bottom of the Trench, under the Bark, to cause it to heat; but this is what I would never practise, unless I wanted the Bed sooner than the Bark would heat of itself, and then I would put but a small Quantity of Dung at Bottom, for that is subject to make it heat too violently, and will occasion its losing the Heat sooner than ordinary; and there will never be any Danger of the Bark's heating if it be new, and not put into the Trench too wet, though it may sometimes be a Fortnight or more before it acquires a sufficient Warmth, but then the Heat will be more equal and lasting.

The Frames which cover these Beds, should be proportioned to the several Plants they are designed to contain: For Example, If they are to cover the Ananas or Pine Apple, the back Part of the Frame should be 3 Feet high, and the lower Part 15 Inches, which will be a sufficient Declivity to carry off the Wet; and the back side will be high enough to contain the Plants that are in fruit, and the lower Side will be sufficient for the shortest Plants; so that by placing them regularly according to their Height, they will not only have an equal Distance from the Glasses, but also appear much handsomer to the Sight. And although many People make

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make their Frames deeper than what I have allotted, yet I am fully persuaded, that where there is but Height enough to contain the Plants, without bruising their Leaves, it is much better than to allow a larger Space; for the deeper the Frame is made, the less will be the Heat of the Air inclosed therein, there being no artificial Warmth but what the Bark affords, which will not heat a large Space of Air; and as the Pine Apple requires to be constantly kept very warm, in order to ripen the Fruit well; so it will be found upon Trial, that the Depth I have allowed will answer that Purpose better than a greater.

But if the Bed be intended for taller Plants, then the Frame must be made in Depth proportionable thereto; but if it be for sowing Seeds, the Frame need not be above 14 Inches high at the Back, and 7 deep in the Front, by which Means the Heat will be much greater, and this is commonly the Proportion allowed to the Frames usually made Use of in the Kitchen Gardens. As to their Length, that is generally according to the Fancy of the Owner; but they commonly contain 3 Lights each, which is in the Whole about 11 Feet in Length, though sometimes they are made to contain 4 Lights; but this is too great a Length for the Boxes, for the Frames thus made are not so handy to remove, as when they are shorter, and are more subject to decay at their Corners. Some indeed have them to contain but 2 Lights, which is very handy for raising Cucumber and Melon Plants while young; but this is too short for a Bark Bed, as not allowing Room for a proper Quantity of Bark to continue a Warmth for any considerable Time, as was before-mentioned; but for the other Purposes, one or two such Frames are very convenient for common Dung Beds.

As to those Frames which are made very deep, it is much the better Way to have them made to take asunder at the 4 Corners, so that they may be removed with Ease; otherwise it will be very difficult to take the Frame off, when there is Occasion to put in new Bark, or take out the old. The Manner of making these Frames is generally known, or may be much better conceived by seeing them than can be expressed in Writing, therefore I shall forbear saying any Thing more on this Head.

HOTTONIA. Boerb. Ind. alt. 1. p. 207. Lin. Gen. Pl. 186. *Stratiotes*. Vaill. Aët. Par. 1719. Water Violet.

The Characters are,

The Flower has 1 Petal, which hath a Tube the Length of the one leaved Empalement, but cut above into 5 oblong oval Segments, which spread open and are indented at their Extremity. It hath 5 short Awl-shaped Stamina, standing on the Tube of the Petal opposite to the Cuts, terminated by oblong Summits. In the Center is situated a globular Germen ending in a Point, supporting a short slender Style crowned by a globular Stigma, which afterward becomes a Capsule of the same Form with 1 Cell, filled with globular Seeds, sitting upon the Empalement.

We know but one Species of this Genus, viz.

HOTTONIA. Boer. Ind. alt. 1. p. 207. This is the *Milfolium aquaticum* sive *viola aquatica caule nudo*. C. B. P. 147. Water Milfoil, or Water Violet, with a naked Stalk.

This Plant grows naturally in standing Waters, in

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many Parts of *England*; the Leaves which are for the most Part immersed in the Winter, are finely winged and flat, like most of the Sea Plants; these extend pretty wide, and at the Bottom have long fibrous Roots, which strike into the Mud; the Flower Stalks rise 5 or 6 Inches above the Water, they are naked, and toward the Top have 2 or 3 Whorls of purple Flowers, and are terminated by a small Cluster of the same. These Flowers have the Appearance of the Stock-gillflower, so make a pretty Appearance on the Surface of the Water. The Flowers appear in *June*.

It may be propagated in deep standing Waters, by procuring its Seeds when ripe, from the Places of their natural Growth; which should be immediately dropped into the Water where they are designed to grow, and the Spring following they will appear; and if they are not disturbed, they will soon propagate themselves in great Plenty.

HOEING is necessary and beneficial to Plants, for two Things: 1st, For destroying Weeds; 2dly, Because it disposes the Ground the better to imbibe the Night Dews, keeps it in a constant Freshness, and adds a Vigour to the Plants and Trees, whose Fruit by that Means, becomes better conditioned than otherwise it would be.

This Operation is performed by the Hand, with an Instrument called a Hoe, which is well known to every Gardener. There are several Sizes of these, the smallest which is called an Onion Hoe, is not more than 3 Inches broad, and is used for hoeing Onions; not only to cut up the young Weeds, but also to thin the Onions, by cutting up all those which are too close. The next Size is near 4 Inches and a Half broad, and is called a Carrot Hoe; this is used for hoeing Carrots, or any other Crop which requires the same Room as those. The largest Size is about 7 Inches broad, and is frequently called a Turnep Hoe, being used for hoeing Turneps; but this is generally used by the Kitchen Gardeners, for hoeing between all their Crops which are planted out, or stand so far asunder as to admit an Instrument of this Breadth to pass between the Plants. Besides these Sort of Hoes, which are contrived to draw toward the Person who uses them, there is another Sort of a different Form, called a *Dutch Hoe*; this is made for the Person who uses it to push from him, so that he does not tread over the Ground which is hoed. This is a very proper Instrument for scuffling over the Ground, to destroy Weeds, in such Places where the Plants will admit of its being used, and a Person will go over a much greater Space of Ground in the same Time with one of these Instruments, than with the common Hoe; but this Instrument is not so proper for hoeing out Crops, so as to leave the Plants at a proper Distance, nor will it penetrate the Ground so far; therefore the other Sort of Hoe is to be preferred to this, because it stirs the Ground and loosens the Surface, whereby the Dews penetrate the Ground, and thereby promote the Growth of the Plants.

Of late Years there has also been another Instrument introduced in the Field Culture, called the Horse Hoe, which is a Sort of Plough with the Shear set more inclining to a horizontal Position than the common Plough; but as most of the Farmers are at a Loss how

to use this Instrument, it has been but little used in this Country as yet; nor is it likely to be brought into Use, unless the Garden Farmers near London, who are undoubtedly the best Husbandmen in Europe, introduce it; for the common Farmers never can be supposed to alter their old established Methods, till by Necessity they are drove to it: A strong Instance we have of this Kind, in the Culture of Turneps, which for many Years were sown in most of the Counties in England, but till within about 40 Years past, were never hoed, except within 20 or 30 Miles of London, where the Gardeners who had been bred in the Kitchen Gardens near London, every Season went out in particular Gangs to the different Parts of the Country, and each Party engaged to hoe the Turneps in such a particular District, at a certain Price per Acre; and from the Success of the Farmers who employed them, their Neighbours were at Length tempted to follow their Example, so that it became necessary for some of their Labourers to understand this Work; and from that Time it has prevailed so much, that many of the distant Counties have now engaged in this Practice: And if the Horse Hoeing Husbandry was but well established among the Farmers near London, there would be little Doubt of its spreading into the distant Counties; but there are great Prejudices against it at present, most of them arising from the Ignorance of the Farmers in general, and others from the over Fondness of the Author to his own Schemes, which has in many Particulars carried him into many known Absurdities; and these being well known to every practical Farmer and Gardener, are sufficient Arguments with them against making Trial of the useful Part of his Scheme.

The Utility of this Method of Husbandry, is first, in proportioning the Number of Plants to the Pasture, which the Ground is supposed capable of nourishing properly. The second is, by frequent stirring the Surface of the Land, all Weeds which rob the Crop of its Nourishment are destroyed, and the Clods of Earth are divided and pulverized, so that the Roots of the Plants can more easily penetrate them, and search their proper Food; besides, the Dews and Moisture are easily imbibed in this loose Ground, whereby the Plants receive a greater Share of Nourishment.

There are few Persons who properly consider, of what Consequence the stirring and breaking the Surface of the Ground is to all Crops growing therein. I have frequently made Trial of this, when the Crop has been so bad as to be thought not worth standing, which has been occasioned by the great Quantity of Rain which has fallen, whereby the Surface of the Ground has been so closely bound, that the Plants could find no Nourishment, but have changed their usual Verdure to a purple Colour, and have made no Progress; but upon slightly digging the Ground and breaking the Clods, the Plants have put out new Roots, and have flourished exceedingly. From many repeated Trials of this Kind I can affirm, that if the Wheat in general was sowed in Rows, so that the Plough may be brought between them in the Spring, to loosen the Ground, which by the Winter's Rains may have been too closely bound, the Crop would more than double what is the common Produce.

But the Author of this Scheme was too sanguine in

his Proposals, first, by asserting, that in this Method of Husbandry, the Land would constantly produce the same Sort of Crops without Diminution; and secondly, it might be done without dressing or manuring the Ground; and his Fondness for his own Scheme carried him so far in the Prosecution of it, as at last to have much worse Crops than any of his Neighbours; however, this should not discourage others from the Practice of it, though upon different Principles: For although the Land thus cultivated, will not nourish the same Plant without manuring several Years, yet by this Method of Husbandry I can affirm, that all Crops will be so much improved, as to doubly answer the Difference of Expence, and less than a third Part of the Seed will be enough for the same Space of Ground. The common Swing Plough, will answer all the Intents of this Husbandry.

HUMIDITY is the Quality commonly called Moisture, or the Power of wetting others, which Quality some Liquors and Fluids are endowed with; and it differs very much from Fluidity, in that it depends altogether on the Congruity of the component Particles of any Liquor to the Pores or Surfaces of such particular Bodies, as it is capable of adhering to.

Thus Quicksilver is not a moist Liquor, in Respect to our Hands or Clothes, and many other Things it will not stick to; but it may be called a moist Liquor, in Respect to Gold, Lead, or Tin, to the Surfaces of which it will presently adhere.

Nay, Water itself, that wets almost every Thing, and is the great Standard of Humidity or Moisture, is not capable of wetting every Thing; for it stands, and runs easily off in globular Drops, on the Leaves of Cabbages, and many other Plants; and will not wet the Feathers of Ducks, Swans, and other Water Fowl.

And it is very plain, that it is only the Texture that may cause the Fluid to be humid; because neither Quicksilver alone, nor Bismuth, will stick upon Glass; yet being mixed together, they will form a Mass that will stick on it; as is very well known in the Foliating of Looking Glasses, in which such a Composition is used.

HUMULUS. See Lupulus.

HURA. Lin. Gen. Pl. 965. Hura, or Sand Box Tree.

The Characters are,

It hath male and female Flowers on the same Plant. The male Flowers have no Petal, or scarce any Empalement, but a Column of Stamina, joined at Bottom into a Cylinder, spreading out at the Top, terminated by single Summits lying over each other. The female Flowers have a swelling Empalement of 1 Leaf, with 1 tubulous Petal; the roundish Germen is situated in the Bottom of the Empalement, supporting a long cylindrical Style, crowned by a large Funnel-shaped Stigma, which is a plain Convex, divided into 12 equal obtuse Parts. The Germen becomes an orbicular ligneous Fruit, depressed at Top and Bottom, having 12 deep Furrows, with so many Cells, which open at the Top with an Elasticity, each containing 1 round flat Seed.

We know but 1 Species of this Genus, viz.

HURA. Hort. Cliff. 486. This is the Hura Americana, Abutili Indici folio. Hort. Amst. 2. 131. Tab. 66. American Hura with the Leaf of the Indian Abutilon, commonly called in the West-Indies Sand Box Tree.

This grows naturally in the Spanish West-Indies, from whence

whence it has been introduced into the *British Colonies of America*, where some of the Plants are preserved by Way of Curiosity. It rises with a soft ligneous Stem to the Height of 24 Feet dividing into many Branches, which abound with a milky Juice, and have Scars on their Bark, where the Leaves have fallen off. The Branches are garnished with Heart-shaped Leaves, those which are the biggest are 11 Inches long, and 9 broad in the Middle, indented on their Edges, having a prominent Mid-rib, with several transverse Veins from that to the Sides, which are alternate; these stand upon long slender Foot Stalks. The male Flowers come out from between the Leaves, upon Foot Stalks, 3 Inches long; these are formed into a close Spike, or Column, lying over each other like the Scales of Fishes. The female Flowers are situated at a Distance from the male; these have a swelling cylindrical Empalement, out of which arises the Petal of the Flower, which hath a long Funnel-shaped Tube, spreading at the Top, where it is divided into 12 Parts, which are reflexed. After the Flower is past, the Germen swells and becomes a round, compressed, ligneous Capsule, having 12 deep Furrows, each being a distinct Cell, containing 1 large round compressed Seed; when the Pods are ripe, they burst with an Elasticity, and throw out their Seeds to a considerable Distance.

It is propagated by Seeds, which should be sown early in the Spring, in Pots filled with light rich Earth, and plunged into a hot Bed of Tanners Bark. If the Seeds are fresh, the Plants will appear in about 5 Weeks after the Seeds are sown. As the Plants will advance very fast, where due Care is taken of them; they should have a large Share of fresh Air admitted to them in warm Weather, otherwise they will draw up too weak. When the Plants are about 2 Inches high, they should be transplanted each into a separate small Pot filled with light rich Earth, and plunged again into the hot Bed of Tanners Bark, being careful to shade them from the Heat of the Sun, until they have taken new Root, after which Time they must have free Air admitted to them, by raising the Glasses in Proportion to the Warmth of the Season, and they should be frequently, but gently, watered. When the Plants have filled these small Pots with their Roots, they must be shaken out of them, and their Roots trimmed, and then placed in larger Pots, which should be filled with the like rich Earth, and plunged again into the hot Bed, where they should remain till *Michaelmas*, provided the Plants have Room, without touching the Glasses, at which Time they must be removed into the Bark Stove, and plunged in the warmest Part thereof; during the Winter Season they must be sparingly watered, for as the Plants have succulent Stalks, much Moisture will rot them; they must also be kept very warm, otherwise they will not live in this Country. In Summer they must have a large Share of fresh Air in warm Weather, but they must not be removed into the open Air, for they are too tender to live abroad in the warmest Part of the Year in this Country.

This Plant is now pretty common in the *English Gardens*, where there are Collections of tender Plants preserved, some of which are grown to the Height of 12 or 14 Feet, and many of them have produced Flowers,

but there has not been any of their Fruit produced as yet in *England*.

As these Plants have ample Leaves, of a beautiful green Colour, they afford an agreeable Variety among other tender exotick Plants in the Stove, for where they are kept warm, and duly refreshed with Water, they retain their Leaves all the Year in Verdure.

The Fruit of this Plant is, by the Inhabitants of the *West Indies*, cut open on the Side where the Foot Stalk grew, and the Seeds carefully taken out, after which the Shells are used to contain Sand for Writing, which gave Rise to the Name of Sand Box. When these Fruit are brought entire into *England*, it is very difficult to preserve them, for when the Heat of the Summer comes on, they usually burst with an Explosion, and scatter their Seeds about, and from the Noise made by the ripe Fruit, it was by *Hernandez* titled, *Arbor Crepitans*.

HYACINTHUS. *Tourn. Infl. R. H. 344. Tab. 180. Lin. Gen. Pl. 385. Hyacinth; in French, Jacinte.*

The Characters are,

The Flower has no Empalement. It has 1 Bell-shaped Petal, whose Rim is cut into 6 Parts, which are reflexed, and 3 Nectaria on the Point of the Germen, with 6 short Awl-shaped Stamina, terminated by Sammits, which close together. In the Center is situated a roundish three-cornered Germen, having 3 Furrows supporting a single Style, crowned by an obtuse Stigma. The Germen becomes a roundish 3 cornered Capsule, having 3 Cells, which contain roundish Seeds.

The Species are,

1. HYACINTHUS *corollis campanulatis sexpartitis apice revolutis. Hort. Cliff. 125.* Hyacinth with Bell-shaped Petals, divided into 6 Parts, reflexed at their Tops. *Hyacinthus oblongo flore caeruleus major. C. B. P. 43.* Greater Hyacinth with an oblong blue Flower, and the *Hyacinthus Anglicus. Ger. 99. English Hyacinth, or Hare Bells.*

2. HYACINTHUS *corollarum exterioribus petalis distinctis, interioribus coadunatis. Lin. Sp. Pl. 317.* Hyacinth whose exterior Part of the Flower hath distinct Petals, but the interior joined. *Hyacinthus obsoleto flore. C. B. P. 44.* Hyacinth with a worn-out Flower.

3. HYACINTHUS *corollis campanulatis sexpartitis, floribus utrinque dispositis.* Hyacinth with Bell-shaped Petals, which are divided into 6 Parts, and Flowers ranged on each Side of the Stalk. *Hyacinthus floribus campanulae utrinque dispositis. C. B. P. 44.* Hyacinth with Bell-shaped Flowers disposed on every Side the Stalk.

4. HYACINTHUS *corollis campanulatis sexpartitis racemo cornuo. Lin. Sp. Pl. 317.* Hyacinth with Bell-shaped Petals, divided into 6 Parts, and a nodding Branch of Flowers. *Hyacinthus floribus campanulae, uno versu dispositis. C. B. P. 44.* Hyacinth with Bell-shaped Flowers ranged on one Side the Stalk.

5. HYACINTHUS *corollis campanulatis semisextidis basi cylindricis. Hort. Upsal. 85.* Hyacinth with Bell-shaped Petals, cut half Way into 6 Parts, and a cylindrical Base. *Hyacinthus oblongo caeruleo flore minor. C. B. P. 44.* Lesser Hyacinth with an oblong blue Flower.

6. HYACINTHUS *corollis infundibuliformibus semisextidis basi ventricosis. Hort. Upsal. 85.* Hyacinth with Funnel-shaped Petals cut half into 6 Parts, and swelling

at the Base. *Hyacinthus Orientalis albus primus*. C. B. P. 44. Early white Eastern Hyacinth.

The Sorts here mentioned, are all of them distinct Species, of which there are several Varieties, especially of the 6th, which have been cultivated with so much Art, as to render some of them the most valuable Flowers of the Spring; in *Holland* the Gardens abound with them, where the Florists have raised so many Varieties as to amount to some Hundreds, and some of their Flowers are so large, double, and finely coloured, that their Roots are valued at 20 or 30 Pounds Sterling each Root; to enumerate these Varieties here, would swell this Work to very little Purpose, as every Year produces new Kinds.

The 1st Sort grows naturally in Woods, and near Hedges, in Lands which have lately been Woods, in many Parts of *England*, so is seldom admitted into Gardens, but the poor People who make it their Business to gather the wild Flowers of the Fields and Woods for Nofegays, &c. bring great Quantities of them in Spring to *London*, and sell them about the Streets.

There is a Variety of this with white Flowers, kept in some Gardens, which only differs in the Colour of their Flowers from the other.

The 2d Sort is preserved in some few Gardens for Variety, but as it hath as little Beauty as the first, is seldom allowed a Place in the Flower Garden. The Flowers are narrower than those of the first Sort, and seem as if their Petals were divided to the Bottom, 3 of the outer Segments being separated from the other, standing at a small Distance from the 3 Interiors, but they are all joined at their Base; when the Flowers first appear, they are of a light blue Colour, but before they decay, they fade to a worn-out purple Colour. This flowers early in the Spring, and grows naturally in *Spain* and *Mauritania*.

The 3d Sort grows naturally in *Spain* and *Italy*; this hath blue Flowers of the open spread Bell-shape, divided into 6 Segments almost to the Bottom, and disposed on every Side the Stalk. The Stalks rise about 9 Inches high, and when the Roots are strong, the Thyse of Flowers is large. This flowers about the same Time with the first Sort, and was formerly preserved in Gardens, but since there have been so many finer Flowers raised from the Seeds of the Eastern Hyacinths, they have been almost totally neglected, so that they are seldom seen but in old Gardens.

The 4th Sort seems to be a Variety of the first, the Flowers being ranged for the most Part on one Side of the Stalk, and the Top of the Bunch is always bent on one Side. The Flowers are of a blush Peach Colour, and appear about the same Time as the first Sort.

The 5th Sort grows naturally in *Spain*; this hath a smaller Flower than either of the former Sorts, and comes earlier in the Season. The Petal is cut into 6 Parts half the Length, and is reflexed at the Brim; the lower Part is cylindrical, a little swelling at the Base, and of a deeper blue than either of the former. This was formerly called by the Gardeners the Coventry blue Hyacinth.

The 6th Sort is the Eastern Hyacinth, of which we formerly had no other Varieties in the *English* Gardens, but the single and double white and blue flowering; but

from the Seeds of these there were a few others raised in *England*, and by the *Flemish* Gardeners who came over annually with their flower Roots to vend in *England*, but the Gardeners in *Holland* have within the last 50 Years raised so many fine Varieties, as to render the former Sorts of no Value.

But those who are desirous to preserve any of the old Sorts, need not be at much Trouble about it, for their Roots propagate in great Plenty in any Soil, or Situation, and require no other Care, but to take up their Roots every third Year, soon after their Leaves decay, and plant them again in Autumn, for if they are permitted to remain longer in the Ground, their Roots will multiply to so great a Degree, as to render their Flowers very small and weak.

All the different Sorts of Hyacinths are propagated by Seeds or Offsets from the old Bulbs; the former Method has been but little practised in *England* till very lately, but in *Holland* and *Flanders* it hath been followed for many Years, whereby they have obtained a very great Variety of the most beautiful Flowers of this Kind, and it is owing to the Industry of the Florists in these Countries, that the Lovers and Delighters in Gardening are so agreeably entertained, not only with the curious Variety of this, but of most other bulbous rooted Flowers, few other Florists thinking it worth their Trouble to wait 4 or 5 Years for the Flowers of Plants of which perhaps scarce one in forty may deserve to be preserved; but they do not consider that it is only the Loss of the 4 or 5 first Years after sowing, for if they continue sowing every Year after they begin, there will be a Succession of Flowers annually, which will constantly produce some Sorts that may be different from what they have before seen, and new Flowers being always the most valuable to skilful Florists (provided they have good Properties to recommend them), will always be a sufficient Recompence for the Trouble, and Loss of Time.

The Method of raising these Flowers from Seed is as follows: Having provided yourself with some good Seed (which should be saved from either semi-double, or such single Flowers as are large, and have good Properties), you must have a Parcel of square shallow Boxes or Pots, which must be filled with fresh light sandy Soil, laying the Surface very level; then sow your Seeds thereon as equally as possible, covering it about half an Inch thick with the same light Earth; the Time for this Work is about the Middle of *August*. These Boxes, or Pots, should be placed where they may enjoy the Morning Sun only until the latter End of *September*, at which Time they should be removed into a warmer Situation, and towards the End of *October* they should be placed under a common hot Bed Frame, where they may remain during the Winter and Spring Months, that they may be protected from hard Frosts; though they should be exposed to the open Air when the Weather is mild, by taking off the Glasses. In *February* the young Plants will begin to appear above Ground, at which Time they must be carefully screened from Frosts, otherwise they will be destroyed when they are so young; but you must never cover them at that Season but in the Night, or in very bad Weather, for when the Plants are come up, if they are close covered, they will draw up very tall and slender, and thereby prevent the Growth of their Roots. At the

End

End of *March*, if the Weather proves good, you may remove the Boxes out of the Frame, placing them in a warm Situation, observing, if the Season be dry, to refresh them now and then with a little Water, as also to keep them very clear from Weeds, which would soon overspread the tender Plants, and destroy them.

Towards the latter End of *April*, or Beginning of *May*, these Boxes should be removed into a cooler Situation; for the Heat of the Sun at that Season would be too great for these tender Plants, causing their Blades to decay much sooner than they would, if they were screened from its Violence. In this shady Situation they should remain during the Heat of Summer, observing to keep them constantly clear from Weeds; but you must not place them under the Dripping of Trees, &c. nor should you give them any Water after their Blades are decayed, for that would infallibly rot the Roots. About the latter End of *August* you should sift a little light rich Earth over the Surface of the Boxes, and then remove them again into a warmer Situation, and treat them, during the Winter, Spring, and Summer Months, as before directed; and about the Middle of *August* you should prepare a Bed of light rich sandy Soil, in Proportion to the Quantity of your Seedling Plants, and having levelled the Surface very even, you should take out the Earth from the Boxes in which your Plants were raised, into a Sieve, in order to get out all the Roots, which by this Time (if they have grown well) will be about the Thickness of a small Quill; these Roots should be placed upon the Bed at about 2 or 3 Inches asunder, observing to set the bottom Part of their Roots downwards, then cover them over 2 Inches thick with the same light Earth; but as it will be impossible to get all the small Roots out of the Earth in the Boxes, you should spread the Earth upon another Bed equally, and cover it over with light Earth, by which Method you will not lose any of the Roots, be they ever so small.

These Beds must be arched over with Hoops, and in very hard frosty Weather covered with Mats, &c. to protect them from Frost; and in the Spring, when the green Leaves are above Ground, if the Weather should be very dry, you must refresh them with Water, but do this sparingly, for nothing is more injurious to these Bulbs, than too great Quantities of Moisture. During the Summer Season you must constantly keep the Beds clear from Weeds, but after the Blades are decayed, you must never give them any Water; and in Autumn you should stir the Surface of the Bed with a very short Hand Fork, being exceeding careful not to thrust it so deep as to touch the Roots, which, if hurt, are very subject to perish soon after. Then sift a little fresh light rich Earth over the Bed about an Inch thick, or somewhat more, and in Winter cover them again (as was before directed.) In this Bed the Roots may continue 2 Years, observing to treat them, both in Summer and Winter, as before; then the third Year the Roots should be carefully taken up when their Leaves decay, and kept out of the Ground till *August*, when they should be planted into new Beds prepared as before, 6 Inches asunder; in these Beds the Roots may remain till they flower, during which Time they should be treated as before, with this Difference only, that instead

of covering them with Mats in Winter, the Surface of the Ground should be covered with Tanner's Bark.

When their Flowers begin to shew themselves, you should mark all such as appear to have good Properties, by thrusting a small Stick down by each Root, which Roots, at the Time for taking them up, should be selected from the rest, and planted by themselves, though I would by no Means advise the rejecting any of the other Roots, until they have blown two Years, before which you cannot ascertain their Value. When the green Leaves of these Plants begin to decay, their Roots must be taken up; and the Earth of the Bed being raised into a Ridge, the better to shoot off the Moisture, they should be laid into the Earth again in a horizontal Position, leaving the green Leaves hanging downwards from the Roots, whereby the great Moisture contained in their very succulent Leaves and Flower Stalks is exhaled, and prevented from entering the Roots, which, when suffered to return into them, is very often the Cause of their rotting. In this Ridge the Roots should remain until the Leaves are quite dried off, when they must be taken up, and after being cleared of all Manner of Filth, which would be hurtful to them; they must be laid up in Boxes, where they may be preserved dry until *September*, which is the proper Season for planting them again; the Method of doing this shall be hereafter mentioned, when we treat of the Management of old Roots.

I shall now proceed to the Culture of such Hyacinths as have either been obtained from *Holland*, or are of our own Product from Seeds, that are very beautiful, and worthy to be preserved in Collections of good Flowers, and it hath been the Want of Skill in the Management of these noble Flowers, which has occasioned the ill Success most People have had with them in *England*, whereby they have been neglected, supposing their Roots to degenerate after they have flowered in *England*; which is a great Mistake, for were the Roots managed with the same Art as is practised in *Holland*, I am fully convinced they would thrive full as well in *England* as there, or elsewhere, as I have experienced; for, from some Hundreds of Roots which I have received from *Holland* at two or 3 different Times, I have had a very great Increase of their Roots, which were as large, and produced as many Flowers upon their Stems, as the same Sort ever did in *Holland*.

The Soil in which these Flowers succeed best, is a light sandy fresh rich Earth, which may be composed after the following Manner: Take half fresh Earth from a Common, or Pasture Land, which is of a sandy Loam; this should not be taken above 8 or 9 Inches deep at most, and if you take the Turf, or green Sward with it, it will still be better, provided you have Time to let it rot; to this you should add a 4th Part of Sea Sand, and the other 4th Part of rotten Cow Dung, mix these well together, and cast it into a Heap, where it may remain until you use it, observing to turn it over once in 3 Weeks or a Month. If this Compost be made 2 or 3 Years before it is used, it will be much the better; but if you are obliged to use it sooner, then it should be oftener turned, that the Parts may the better unite.

This Soil should be laid 2 Feet deep on the Beds, de-

signed for your Hyacinths, and you may lay a little rotten Cow Dung, or Tanners Bark at the Bottom, which may be within reach of the Fibres, but it should by no Means touch the Bulb. If the Soil be very wet, where these Beds are made, you should raise them 10 or 12 Inches above the Surface, but if it be dry, they need not be raised above 3 or 4 Inches.

The Manner of preparing the Beds is as follows: First, Take all the former old Earth out of the Bed to the Depth you intend, which should be 3 Feet; then spread a little rotten Dung, or Tan, in the Bottom, laying it very level, upon this you should lay the above-mentioned Earth, 10 or 12 Inches thick, leveling it very even; then score out the Distances for the Roots, which should be 8 Inches square, in strait Rows each Way, after which, place your Roots exactly in the Squares, observing to set the bottom Part downward; then cover the Roots 6 Inches deep with the same prepared Earth, being very careful in doing this, not to displace any of them; and if the Tops of these Beds are made a little rounding, to shoot off the Wet, it will be of Service, provided they are not made too high, which is a Fault the other Way.

The best Season for planting these Roots is towards the Middle or latter End of *September*, according to the Earliness or Lateness of the Season, or the Weather which then happens; but I would advise you never to plant them when the Ground is extreme dry, unless there be a Prospect of some Rain soon after; for if the Weather should continue dry for a considerable Time after, the Roots will receive a Mouldiness, which will certainly destroy them.

These Beds will require no farther Care until the Frost comes on very severe, at which Time they should have some rotten Tan spread over the Bed, about 4 Inches thick, and if the Alleys on each Side of the Bed are filled up, either with rotten Tan, Dung, or Sand, it will prevent the Frost from penetrating the Ground to the Roots, and secure them from being destroyed; but when the Winters prove very severe, it will also be proper to have some Peas Haulm, or such like Covering, laid over them, which will keep out the Frost better than Mats, and lying hollow, will admit the Air to the Surface of the Ground, and also permit the Exhalations to pass off, whereby the Earth will remain dry, and prevent the Roots from rotting, which has often happened when the Beds have been too close covered. But you must observe to, take off this Covering whenever the Weather is mild, and only let it continue on in very hard Frosts, for where the Beds are covered with Tan or Sea Coal Ashes, no common Frost can penetrate through, so the other Coverings are useless, except in very severe Frost; for a small Frost cannot injure the Roots before the green Leaves appear above Ground, which is seldom before the Beginning of *February*, at which Time the Beds must be arched over with Hoops, that they may be covered either with Mats, Canvas, or some other light Covering, to prevent the Frost from injuring the Buds as they arise above Ground; but these Coverings must be constantly taken off every Day when the Weather is mild, otherwise the Flower Stems will be drawn up to a great Height, and become very weak, and the Foot Stalks of the Flowers will be

long and slender, and so rendered incapable of supporting the Bells, which is a great Disadvantage to the Flowers, for one of their greatest Beauties consists in the regular Disposition of their Bells. When these Hoops are fixed over the Beds, the rotten Tan should be taken off them, in doing which, great Care should be taken not to bruise or injure the Leaves of the Hyacinths, which by that Time will be beginning to break out of the Ground with the Flower Stem, therefore the Tan should be removed by the Hands, or if any Instrument is used in doing it, there must be great Caution used.

When the Stems of the Flowers are advanced to their Height, before the Flowers expand, you should place a short Stick down by each Root, to which, with a Wire formed into a Hoop, the Stem of the Flowers should be fastened, to support them from falling, otherwise, when the Bells are fully expanded, their Weight will incline them to the Ground, especially if not screened from Wind and Rain.

During their Season of flowering they should be covered in the Heat of the Day from the Sun, and also from all heavy Rains, but they should be permitted to receive all gentle Showers, as also the Morning and Evening Sun; but if the Nights are frosty, they must be constantly defended therefrom. With this Management you may continue your Hyacinths in Beauty at least one whole Month, and sometimes more, according to their Strength, or the Favourableness of the Season.

When their Flowers are quite decayed, and the Tops of their Leaves begin to change their Colour, you must carefully raise the Roots out of the Ground with a narrow Spade, or some other handy Instrument; this is what the *Dutch* Gardeners term lifting them; in doing this, the Instrument must be carefully thrust down by the Side of the Root, being careful not to bruise or injure it, as also to put it below the Bottom of the Root; then by forcing this Instrument on one Side, the Fibres of the Root are raised and separated from the Ground. The Design of this is, to prevent their receiving any more Nourishment from the Ground, for by imbibing too much Moisture at this Season, the Roots frequently rot after they are taken up; about a Fortnight after this Operation, the Roots should be entirely taken out of the Ground, and the Earth of your Beds raised into a high sharp Ridge, laying the Roots into it in a horizontal Position, with their Leaves hanging out, for the Reason before given.

In this Position the Roots should remain until the green Leaves are entirely decayed, which perhaps may be in 3 Weeks Time. This is what the *Dutch* Gardeners term, the Ripening their Roots, because by this Method the Roots become firm, and the outer Cover is smooth, and of a bright purple Colour; whereas those Roots which are permitted to remain undisturbed, till the Leaves and Stalks are quite decayed, will be large, spongy, and their outer Coats will be of a pale Colour, for the Stems of many of these Flowers are very large, and contain a great Quantity of Moisture, which, if suffered to return into the Roots, will infallibly cause many of them to perish. After they are so ripened, you must take them out of the Ground, and wipe them clean with a soft woollen Cloth, taking off all the decayed

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cayed Parts of the Leaves and Fibres, putting them in to open Boxes where they may lie singly, and be exposed to the Air, but they must be preserved carefully from Moisture; nor should they be suffered to remain where the Sun may shine upon them; in this Manner they may be preserved out of the Ground until September, which is the Season for planting them again, at which Time you must separate all the strong flowering Roots, planting them in Beds by themselves, that they may make an equal Appearance in their Flowers; but the Offsets and smaller Roots should be planted in another separate Bed for one Year, in which Time they will acquire Strength, and by the succeeding Year will be as strong as the older Roots.

The single and semi-double Flowers should be planted also in a Bed by themselves, where they should be carefully sheltered (as was directed before) from the Frost, until the Flowers are blown; at which Time their Covering should be entirely removed, and they suffered to receive the open Air; which, though it may soon deface the Beauty of the Flowers, yet is absolutely necessary to promote their feeding; and when the Seeds are quite ripe, you must cut off the Vessels and preserve them, with the Seeds therein, until the Season for sowing it. But you must observe, that after these Flowers have produced Seeds, they seldom flower so well again, at least not in two Years after; so that the best Method to obtain good Seeds is, to plant new Roots every Year for that Purpose; although these Roots are, by most Persons, taken up every Year, yet if the Beds are well prepared for them, they may remain two Years in the Ground unremoved, and the Roots will flower stronger the second Year than the first; but those Persons who cultivate them for Sale, every Year take up their Roots which are large and saleable; but the Offsets and small Roots, they usually leave 2 Years in the Ground.

There are some Persons who let their Hyacinth Roots remain 3 or 4 Years unremoved, by which they have a much greater Increase of Roots, than when they are annually taken up; but the Roots by this great Increase are frequently degenerated, so as to produce single Flowers, therefore I should advise the taking up the Roots every other Year; and those of the most valuable Kinds every Year, which is the most certain Method to preserve them in their greatest Perfection, though the Increase may not be so great; and if these Roots are planted 3 Weeks or a Month earlier in Autumn than is before directed, it will cause them to produce stronger Flowers; and those Roots which are annually removed, will be rounder and firmer, than such as stand two Years unremoved.

For the other Sorts of Hyacinth, see Muscari and Ornithogalum.

HYACINTHUS TUBEROSUS. See Crinum.

HYDRANGÆA. Gron. Flor. Virg. 50. Lin. Gen. Pl. 492. We have no English Title for this Genus.

The Characters are,
The Flower hath a small permanent Empalement of 1 Leaf, indented in 5 Parts, and 5 roundish Petals which are equal, and larger than the Empalement. It hath 10 Stamina, alternately longer than the Petal, terminated by roundish Summits. Under the Flower is situated a round-

ish Germen, supporting 2 short Styles standing apart, crowned by permanent obtuse Stigmas. The Germen turns to a roundish Capsule, crowned by the 2 burred Stigmas, divided transversely into 2 Cells, filled with small angular Seeds.

We know but one Species of this Genus, viz.

HYDRANGÆA. Gron. Flor. Virg. 50.

This Plant grows naturally in North America, from whence it has been brought within a few Years past to Europe, and is now preserved in Gardens for Variety, more than its Beauty. It hath a spreading fibrous Root, from which is sent up many soft, pithy, ligneous Stalks, which rise about 3 Feet high, garnished at each Joint, with two oblong Heart-shaped Leaves placed opposite, standing on Foot Stalks about 1 Inch long; the Leaves are 3 Inches long, and 2 broad near their Base, sawed on their Edges, and have many Veins running from the Mid-rib upward to their Borders; they are of a light green, and fall away in the Autumn; the Flowers are produced at the Top of the Stalks, in Form of a Corymbus; they are white, composed of 5 Petals, with 10 Stamina surrounding the Style. These appear toward the End of July and in August, but do not often perfect their Seeds in England.

This is easily propagated by parting the Roots; the best Time for this is the latter End of October, which is also the best Time to transplant them: The Plants should have a moist Soil, for they grow naturally in marshy Places; they require no other Culture but to keep them clear from Weeds, and dig the Ground between them every Winter. The Roots are perennial, and if in very severe Frost the Stalks are killed, they will put out new Ones the following Spring.

HYDROCOTYLE, Water Navelwort.

This Plant grows in great Plenty in moist Places in most Parts of England, and is never cultivated for Use, so I shall pass it over with only naming it.

HYDROLAPATHUM. See Lapathum.

HYDROPHYLLON. Lin. Gen. Pl. 187. Hydrophyllon. Tourn. Inst. R. H. 81. Tab. 16. Water Leaf.

The Characters are,

The Flower has a permanent Empalement of 1 Leaf, cut into 5 Segments which spread open. It hath 1 Bell-shaped Petal, divided into 5 Parts, indented at their Points; under each of these Segments is fixed a Nectarium situated about the Middle, which shut up Lengthways by 2 Lamellæ. It hath 5 Stamina longer than the Petal, terminated by oblong prostrate Summits, and an oval-pointed Germen, supporting an Awl-shaped Style the Length of the Stamina, crowned by a bifid spreading Stigma. The Germen becomes a globular Capsule with 1 Cell, inclosing 1 large round Seed.

We know but one Species of this Genus, viz.

HYDROPHYLLON Morini. Juncq. Hort. Water Leaf of Morinus.

This Plant grows naturally in Canada, and many other Parts of America, on moist spongy Ground. The Root is composed of many strong fleshy Fibres, which spread wide on every Side, from which arise many Leaves with Foot Stalks 5 or 6 Inches long, jagged into 3, 5, or 7 Lobes, almost to the Mid-rib; these are indented on their Edges, and have several Veins running from the Mid-rib to the Sides; they are of a lucid

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green, and in the Spring have Water standing on the Cavities, from whence I suppose *Morinus* gave it the Title of Water Leaf, and not from the Plant growing in Water, as *Tournefort* conjectures. The Flowers rise with Foot Stalks from the Root, having 1 or 2 small Leaves of the same Shape with the lower; the Flowers are produced in loose Clusters hanging downward, they are of a dirty white and Bell-shaped, so make no great Figure. They appear in June, and the Seeds sometimes ripen here in August.

This Plant is very hardy in Respect to Cold, but it should be planted in a moist rich Soil; for if it is planted in a dry warm Soil, it will not live, unless constantly watered in dry Weather. It may be propagated by parting the Roots, which should be done in Autumn, that the Plants may be well rooted before Spring, for otherwise they will require a great Deal of Water. It requires a moist Soil and shady Situation.

HYDROPIPER, the common biting Arse-smart, which grows in great Plenty in moist Places near Ditches Sides almost every where.

HYGROMETER is a Machine or Instrument contrived to shew or measure, the Moistness and Driness of the Air, according as it abounds with moist or dry Vapours, and to measure and estimate the Quantity of such Moistness and Driness.

There are divers Kinds of Hygrometers; for whatever Body either swells or shrinks by Driness or Moisture, is capable of being formed into an Hygrometer; such are the Woods of most Kinds, particularly Ash, Deal, Poplar, &c. such also is a Cord, Cat Gut, &c.

Stretch a Hempen Cord or Fiddle String along a Wall, bringing it over a Truckle or Pulley; and to the other End tie a Weight, unto which fit a Style or Index; on the same Wall fit a Plate of Metal divided into any Number of equal Parts, and the Hygrometer is complete.

For it is a Matter of undoubted Observation, that Moisture sensibly shortens the Length of Cords and Strings; and that as the Moisture evaporates, they return to their former Length, and the like may be said of a Fiddle String.

The Weight therefore, in the present Case, upon an Increase of the Moisture of the Air, will ascend, and upon a Diminution of the same will descend.

Hence, as the Index will shew the Spaces of Ascent and Descent, and those Spaces are equal to the Increments and Decrements of the Length of the Cord or Gut, the Instrument will discover whether the Air be more or less humid now, than it was at another given Time.

The ordinary Contrivance with Whip Cord is one of the easiest, for that will infallibly shorten and lengthen as the Air grows moister and drier.

Some recommend a Cat Gut as the best, which may be a Yard in Length suspended, having a Plumbet or Piece of Lead, with an Index or Pointer hanging at the lower End, by Means of which the Cat Gut will twist or untwist as the Air dries or moistens, and shorten and lengthen so as to raise and sink the Plumbet with the Index, and this Index will point out the Degree sought for.

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The Weight of this Lead or Plumbet, should be about two Ounces.

Some Persons who approve a fine Whip Cord instead of Cat Gut, use a greater Weight of Lead; the twisting and untwisting of the Cat Gut or Whip Cord, will make the Lead with the Index turn round, as well as rise and fall. The Degrees may be made upon an open Screw of Brass within, with which the Plumbet and Index has its Motion.

When you are provided with a Barometer and Hygrometer, compare the Motions of the one with the other, in order to judge what Proportion the Rise or Fall of the Quicksilver in the Barometer bears to the twisting of the Cat Gut or Whip Cord; the Degrees of which Motion may be observed by the Index or Pointer of the Hygrometer; and at the same Time both these must be compared with the rising and falling of the Spirit in a Thermometer, to know what Degree of Heat or Cold attends every different Change of Weather.

HYGROSCOPE, a Machine the same as the Hygrometer, and for the same Uses.

These Instruments are of good Use in Conservatories for measuring or shewing the Dampness or Driness of them in the Winter Season.

HYMENÆA, *Lin. Gen. Pl.* 1100. *Courbaril. Plum. Nov. Gen.* 49. *Tab.* 14. Locust Tree.

The Characters are,

The outward Involucrum of the Flower is divided into 2 Parts, the inward is of 1 Leaf indented in 5 Parts; the Flower hath 5 Petals, which are equal in Size, and spread open. It hath 10 declining Stamina, which are short, and terminated by oblong Summits. In the Center is situated an oblong Germen, supporting a declining Style, crowned by an acute Stigma. The Germen becomes a large oblong Pod, with a thick ligneous Shell, divided into several Partitions transversely, in each of which is lodged 1 compressed large Seed, surrounded with a farinaceous Pulp.

We know but one Species of this Genus, viz.

HYMENÆA, *Hort. Cliff.* 484. This is the *Courbaril bifolia*, *flore pyramidata. Plum. Nov. Gen.* 49. Two leaved *Courbaril* with a pyramidal Flower, commonly called Locust Tree in America.

This is a very large spreading Tree in the *West-Indies*, where it grows in great Plenty; It hath a large Stem covered with a russet Bark, which divides into many spreading Branches, garnished with smooth stiff Leaves, which stand by Pairs, their Base joining at the Foot Stalk, to which they stand oblique, one Side being much broader than the other, the two outer Sides being rounded, and their Inside straight, so that they resemble a Pair of Sheep Sheers; they are pointed at the Top, and stand alternately on the Stalk. The Flowers are produced in loose Spikes at the End of the Branches, some of the short ligneous Foot Stalks supporting 2, and others 3 Flowers, which are composed of 5 yellow Petals striped with purple; the Petals are short and spread open; the Stamina are much longer, and of a purplish Colour; these Flowers are succeeded by thick, fleshy, brown Pods, shaped like those of the Garden Bean; they are 6 Inches long, and 2 Inches and a Half broad, of a purplish brown Colour, and of a ligneous Consistence, with a large Suture on both Edges; these

contain 3 or 4 roundish compressed Seeds, divided by transverse Partitions.

The Wood of this Tree is esteemed as good Timber in the *West-Indies*, and it yields a fine clear Resin called *Gum Anime* in the Shops, which makes an excellent Varnish.

It is easily raised from the Seeds if they are fresh; these must be sown in Pots, and plunged into a hot Bed of Tanners Bark: There should be but one Seed put into each Pot, or if there is more, when the Plants appear, they should be all drawn out to one soon after they come up, before their Roots entangle, when it will be hazardous doing it; for if great Care is not taken, the Plant intended to be left may be drawn out with the other. As the Roots of this Plant are but slender, so they are very difficult to transplant; for unless a Ball of Earth is preserved to their Roots, they seldom survive their Removal, therefore they must be seldom transplanted from one Pot to another. The Plants must constantly remain in the Tan Bed in the Stove, and should be treated as other tender Plants of the same Country, giving but little Water to them, especially in Winter. When these Plants first appear, they make considerable Progress for 2 or 3 Months, after which Time they are at a Stand perhaps a whole Year without shooting, being in their Growth very like the *Anacardium*, or *Cashew Nut*, so is very difficult to preserve long in this Country.

HYOSCYAMUS. *Tourn. Inst. R. H.* 117. *Tab.* 42. *Lin. Gen. Pl.* 219. Henbane; in French, *Jusquamine*.

The Characters are,

The Flower has a cylindrical Empalement of 1 Leaf, which is permanent, swelling at the Bottom, and cut into 5 acute Segments at the Top. It hath 1 Funnel-shaped Petal, with a short cylindrical Tube, and an erect spreading Rim, cut into 5 obtuse Parts, 1 being larger than the others; it hath 5 inclining Stamina, terminated by roundish Summits. In the Center is situated a roundish Germen, supporting a slender Style, crowned by a round Stigma. The Germen becomes an oval obtuse Capsule sitting in the Empalement, and divided into 2 Cells by an intermediate Partition, opening with a Lid at the Top, to let out the many small Seeds which adhere to the Partition.

The Species are,

1. **HYOSCYAMUS foliis amplexicaulis.** *Hort. Cliff.* 56. Henbane with Leaves embracing the Stalks. *Hyoscyamus vulgaris, vel niger.* C. B. P. Common black Henbane.

2. **HYOSCYAMUS foliis petiolatis, floribus pedunculatis terminalibus.** Henbane with Leaves having Foot Stalks, and Flowers with Foot Stalks terminating the Branches. *Hyoscyamus major, albo similis, umbilico floris atro purpureo.* T. Cor. Great Henbane like the white, but with a dark purple Bottom to the Flower.

3. **HYOSCYAMUS foliis petiolatis, floribus sessilibus.** *Hort. Upsal.* 56. Henbane with Leaves having Foot Stalks, and Flowers sitting close to the Branches. *Hyoscyamus major, albo similis, umbilico floris virenti.* *Jussieu.* Greater Henbane like the white, with a green Bottom to the Flower.

4. **HYOSCYAMUS foliis petiolatis, floribus solitariis lateralibus.** Henbane with Leaves having Foot Stalks, and Flowers proceeding singly from the Sides of the

Branches. *Hyoscyamus minor albo similis, umbilico floris atro purpureo.* *Tourn. Cor.* 5. Smaller Henbane like the white, with a dark purple Bottom to the Flower.

5. **HYOSCYAMUS foliis lanceolatis inferius pinnato-incisis summis integerrimis.** Henbane with Spear-shaped Leaves, the lower being cut into regular Segments; and the upper ones entire. *Hyoscyamus rubello flore.* C. B. P. Henbane with a redish coloured Flower.

6. **HYOSCYAMUS foliis petiolatis acutè dentatis, pistillo exserto longiore.** Henbane with acute indented Leaves standing on Foot Stalks, and a Pointal longer than the Petal of the Flower. *Hyoscyamus Creticus luteus major.* C. B. P. Greater yellow Henbane of Candia.

7. **HYOSCYAMUS foliis lanceolatis subdentatis, calycibus spinosis.** *Hort. Upsal.* 44. Henbane with Spear-shaped Leaves somewhat indented, and a prickly Empalement. *Hyoscyamus pusillus aureus Americanus, antirrhini foliis glabris.* *Pluk. Alm.* 188. *Tab.* 37. *fol.* 5. Low golden American Henbane, with a smooth Snapdragon Leaf.

The 1st of these Sorts is very common in England, growing upon the Sides of Banks and old Dughills almost every where. It is a biennial Plant with long fleshy Roots, which strike deep into the Ground, sending out several large soft Leaves, deeply slashed on their Edges; they spread on the Ground; the following Spring the Stalks come out, which rise about two Feet high, and are garnished with Leaves of the same Shape, but smaller, which embrace the Stalks with their Base; the upper Part of the Stalk is garnished with Flowers standing on one Side in a double Row, sitting close to the Stalks alternately; these are of a dark purplish Colour with a black Bottom, and are succeeded by roundish Capsules, sitting within the Empalement; these open with a Lid at the Top, and have 2 Cells filled with small irregular Seeds. This is a very poisonous Plant, and should be rooted out in all Places where Children are suffered to come; for in the Year 1729, there were three Children poisoned with eating the Seeds of this Plant, near *Tottenham Court*; two of which slept two Days and two Nights before they could be awakened, and were with Difficulty recovered; but the third being older and stronger, escaped better.

The Roots of this Plant are used for anodyne Necklaces to hang about Children's Necks, being cut to Pieces and strung like Beads, to prevent Fits and cause an easy Breeding of the Teeth, but they are very dangerous to use inwardly. For some Years past there was a Mixture of these Roots brought over with Gentian, and used as such, which was attended with very bad Effects, as hath been mentioned under the Article *Gentian*.

The 2d Sort grows naturally in the Islands of the *Archipelago*. This Sort hath rounder Leaves, which are obtrusely sinuated on their Borders, and stand on long Foot Stalks; the Stalks branch more than those of the first, and the Flowers grow in Clusters at the End of the Branches, standing on short Foot Stalks; they are of a pale yellow Colour, with very dark purple Bottoms.

The 3d Sort is much like the 2d, but the Flowers are in closer Bunches, sitting very close on the Ends of the Branches; they are of a greenish yellow Colour, with green Bottoms. It grows naturally in the warm Parts of *Europe*, and is the Sort whose Seeds should be used

in Medicine, being the white Henbane of the Shops. The 4th Sort was brought from the Levant by Dr. Tournefort. This hath a smaller Stalk than either of the former, whose Joints are farther distant; the Leaves are roundish, and deeply indented in obtuse Segments, standing on pretty long Foot Stalks; the Flowers come out singly from the Side of the Stalks, at a good Distance from each other, they are of a yellow Colour with dark Bottoms.

The 5th Sort grows naturally in Syria; this rises with a branching Stalk 2 Feet high, garnished with long Spear-shaped Leaves fitting close to the Stalk; the lower Leaves are regularly cut on both Sides into acute Segments which are opposite, so are shaped like the winged Leaves, but the upper Leaves are entire; the Flowers grow at the End of the Stalks in close Bunches, they are of a worn out red Colour, and shaped like those of the common Sort.

All these are biennial Plants, which perish soon after they have perfected their Seeds. They flower in June and July, and their Seeds ripen in Autumn, which, if permitted to scatter, will produce Plenty of Plants the following Spring; or if their Seeds are sown at that Season, they will succeed much better than in the Spring; for when they are sown in Spring, the Plants seldom come up the same Year. They are all hardy, and require no other Culture but to keep them clear from Weeds, and thin the Plants where they are too close. The 5th Sort should have a warm Situation and a dry Soil, in which it will stand much better through the Winter than in rich Ground.

The 6th Sort grows naturally in Candia; this is a perennial Plant, with weak Stalks which require Support; the Leaves are roundish, and acutely indented on their Edges, standing on pretty long Foot Stalks; the Flowers come out at each Joint of the Stalk, they are large, of a bright yellow with a dark purple Bottom; the Style of this Sort is much longer than the Petal. It flowers most Part of Summer, and sometimes ripens Seeds in the Autumn. If these Seeds are sown in Pots, as soon as they are ripe, and placed under a hot Bed Frame in Winter, the Plants will come up in the Spring; but if they are kept out of the Ground till Spring, they rarely succeed. This Sort will continue several Years, if kept in Pots and sheltered in Winter, for they will not live in the open Air at that Season, but only require to be protected from Frost; therefore if these Plants are placed under a common hot Bed in Winter, where they may enjoy as much free Air as possible in mild Weather, they will thrive better than when more tenderly treated. This Sort may be easily propagated by Cuttings, which, if planted in a shady Border during any of the Summer Months, will take Root in a Month or six Weeks, and may be afterward planted in Pots, and treated like the old Plants.

HYPECOM. *Tourn. Inst. R. H. 230. Tab. 115. Hypocum; Lin. Gen. Pl. 157.* We have no English Name for this Plant, but you will find it in the Characters are.

The Emplacement of the Flower is composed of 2 small oval Leaves, which are opposite and erect. The Flower hath 4 Petals, the 2 outer which are opposite, are broad, and divided into 3 obtuse Lobes; the 2 other which are al-

ternate, are cut into 3 Parts at their Points; It hath 4 Stamina situated between the Petals, terminated by oblong Summits. In the Center is placed an oblong cylindrical Germen, supporting 2 short Styles, crowned by acute Stigmas. The Germen becomes a long compressed jointed Pod which is incurved, with 1 roundish compressed Seed in each Joint.

The Species are,

1. **HYPECOM** *filiquis arcuatis compressis articulatis.* Hort. Ups. 31. *Hypocum*, with compressed jointed Pods bent inward. *Hypocum latiore folio.* Tourn. Broad leaved *Hypocum*.

2. **HYPECOM** *filiquis cernuis teretibus cylindricis.* Hort. Ups. 31. *Hypocum* with taper, cylindrical, nodding Pods. *Hypocum tenuiore folio.* Tourn. Narrow leaved *Hypocum*.

3. **HYPECOM** *filiquis erectis teretibus torulosis.* Hort. Ups. 32. *Hypocum* with taper, erect, wreathed Pods. *Hypocum filiquis erectis teretibus.* Amm. Ruth. 58. *Hypocum* with erect taper Pods.

The 1st Sort hath many Wing-pointed Leaves of a grayish Colour, which spread near the Ground, and slender branching Stalks, which prostrate on the Ground; these are naked below, and at Top are garnished with 2 or 3 small Leaves of the same Shape and Colour with the under ones; from between these Leaves come out the Foot Stalks of the Flower, each sustaining 1 yellow Flower with 4 Petals, and a Pointal stretched out beyond the Petals, which afterward turns to a jointed compressed Pod about 3 Inches long, which bends inward like a Bow, having one roundish compressed Seed in each Joint. This flowers in June and July, and the Seeds ripen in August.

The 2d Sort hath slender Stalks which stand more erect, and the Segments of the Leaves are longer and much narrower than those of the first; the Flowers are smaller, and come out at the Division of the Branches; these are succeeded by narrow taper Pods, which hang downward. It flowers and seeds at the same Time with the first.

The 3d Sort grows in the East; Dr. Amman received the Seeds from Dauria, and I received the Seeds from Isfria, where it was found growing naturally. This hath much the Appearance of the 2d Sort in Leaf and Flower, but the Pods grow erect and are wreathed and twisted about. It flowers and seeds at the same Time with the others.

These Plants are all of them annual, so their Seeds should be sown the Beginning of March, on a Bed of light fresh Earth where they are to remain, for they seldom succeed if transplanted. When the Plants are come up, they should be carefully cleared from Weeds; and where the Plants are too close, they must be thinned, leaving them about 6 or 8 Inches apart; after this they will require no other Culture, but to keep them constantly clear from Weeds. In June, these Plants will flower, and their Seeds will be ripe in August.

Sometimes when the Spring proves very dry, the Seeds will not grow the first Year; but if the Ground is kept clear from Weeds and not disturbed, the Plants will come up the following Spring. I have known the Seeds of these Plants remain in the Ground 2 Years, and the Plants have come up the third Spring very well; so that it may be very proper to sow some of their Seeds

in Autumn, soon after they are ripe, in a warm Borders, where they may come up early the following Spring; and these will be stronger, and more likely to perfect Seeds, than those sown in Spring, by which Method the Kinds may be preserved.

If the Seeds are permitted to scatter, the Plants will come up the following Spring, without any Care; and if they are treated as the others, they will thrive equally; but when the Seeds are sown in Spring, they should be taken out of the Pods, and divested of their fungous Covering, which adheres close to them, so prevents their growing, till that is rotted and decayed.

These Plants are seldom propagated but by those who are curious in Botany, though for Variety they may have a Place in large Gardens, because they require very little Trouble to cultivate them; and as they take up but little Room, they may be intermixed with other small annual Plants in large Borders, where they will make a pretty Appearance.

The Juice of these Plants is of a yellow Colour, resembling that of Celandine, and is affirmed by some eminent Physicians to have the same Effect as Opium.

HYPERICUM. Tourn. Inst. R. H. 254. Tab. 131. Lin. Gen. Pl. 808. St. John's wort; in French, Mil-lepertuis.

The Characters are,

The Flower has a permanent Empalement, divided into 5 oval concave Segments; it hath 5 oblong oval Petals which spread open, and a great Number of hairy Stamina, joined at their Base in 5 distinct Bodies, terminated by small Summits. It hath in the Center a roundish Germen, supporting 1, 3, or 5 Styles, the same Length of the Stamina, crowned by single Stigmas. The Germen becomes a roundish Capsule, having the same Number of Cells as there are Styles in the Flower, filled with oblong Seeds.

The Species are,

1. **HYPERICUM floribus trigynis, caule ancipiti, foliis obtusis pellucido-punctatis.** Hort. Cliff. 380. St. Johnswort with 3 Styles to the Flower, and obtuse Leaves having pellucid Punctures. *Hypericum vulgare.* C. B. P. 279. Common St. Johnswort.

2. **HYPERICUM floribus trigynis, caule quadrato herbaceo.** Hort. Cliff. 380. St. Johnswort with 3 Styles to the Flowers, and a square herbaceous Stalk. *Hypericum Ascyron dictum, caule quadrangulo.* J. B. 3. p. 382. St. Johnswort with a square Stalk, commonly called St. Peterflower.

3. **HYPERICUM floribus trigynis, staminibus corollâ longioribus, caule fruticoso ancipiti.** Hort. Cliff. 331. St. Johnswort with 3 Styles to the Flower, Stamina longer than the Petals, and a shrubby Stalk looking two Ways. *Hypericum fetidum frutescens.* Tourn. 255. Stinking shrubby St. Johnswort.

4. **HYPERICUM floribus trigynis, calycibus obtusis, staminibus corollâ longioribus caule fruticoso.** St. Johnswort with 3 Styles to the Flower, obtuse Empalements, Stamina longer than the Petals, and a shrubby Stalk. *Hypericum frutescens Canariense multiflorum.* Hort. Amst. 2. p. 135. Shrubby St. Johnswort from the Canaries, having many Flowers.

5. **HYPERICUM floribus trigynis, calycibus acutis, staminibus corollâ brevioribus, caule fruticoso.** Hort. Cliff. 380. St. Johnswort with 3 Styles to the Flower, acute

Empalements, Stamina shorter than the Petals; and a shrubby Stalk. *Hypericum Orientale, flore magno.* T. Cor. 19. Eastern St. Johnswort, with a large Flower.

6. **HYPERICUM floribus trigynis, calycibus obtusis, staminibus corollâ longioribus, capsulis coloratis, caule fruticoso.** St. Johnswort with 3 Styles to the Flower, obtuse Empalements, Stamina longer than the Petals, coloured Seed Vessels, and a shrubby Stalk. *Hypericum Orientale, fetido simile, sed inodorum.* Tourn. Cor. 19. Eastern St. Johnswort, like the stinking Kind, but without Smell.

7. **HYPERICUM floribus pentagynis, caule tetragono herbaceo simpliciter, foliis laevibus integerrimis.** Hort. Upsal. 236. St. Johnswort with 5 Styles to the Flower, a square single herbaceous Stalk, and smooth entire Leaves. *Ascyron magno flore.* C. B. P. 280. Tutian with a large Flower.

8. **HYPERICUM floribus pentagynis, caule fruticoso, foliis ramisque Cicatrisatis.** Lin. Sp. Pl. 783. St. Johnswort with 5 Styles to the Flower, a shrubby Stalk, and scarified Leaves and Branches. *Ascyron Balearicum, frutescens, maximo flore luteo, foliis minoribus, subtus verrucosis salvad.* Boerb. Ind. alt. 1. 242. Shrubby Balearick St. Peterflower with a large yellow Flower, and smaller Leaves warted on their under Side.

9. **HYPERICUM floribus trigynis, fructu baccato, caule fruticoso ancipiti.** Hort. Upsal. 237. St. Johnswort with 3 Styles to the Flower, a fleshy Seed Vessel, and a shrubby Stalk looking two Ways. *Androsamum maximum frutescens.* C. B. P. 280. Common Tutian, or Park Leaves.

10. **HYPERICUM floribus pentagynis, calycibus obtusis, staminibus corollâ aequantibus, caule erecto herbaceo.** St. Johnswort with 5 Styles to the Flower, obtuse Empalements, Stamina equalling the Petals, and an erect herbaceous Stalk.

11. **HYPERICUM floribus monogynis, staminibus corollâ longioribus, calycibus coloratis, caule fruticoso.** St. Johnswort with one Style to the Flowers, Stamina longer than the Petals, coloured Empalements, and a shrubby Stalk.

There are several other Species of this Genus, preserved in Botanick Gardens for Variety, but as they are seldom admitted into other Gardens, I have not enumerated them here.

The 1st and 2d Sorts are both very common Plants, in the Fields in most Parts of England; the first is used in Medicine, but the second is of no Use; these are rarely propagated in Gardens, but I choose to mention them, in order to introduce the other Sorts, which deserve a Place in every good Garden.

The 1st Sort hath a perennial Root, from which arise several round Stalks a Foot and a Half high, dividing into many small Branches, garnished at each Joint with 2 small oblong Leaves, standing opposite, without Foot Stalks; the Branches also come out opposite, The Leaves have many pellucid Spots in them, which appear like so many Holes, when held up against the Light. The Flowers are numerous on the Tops of the Branches, standing on slender Foot Stalks, they are composed of 5 oval Petals, of a yellow Colour, with a great Number of Stamina, not quite so long as the Petals, terminated by roundish Summits. In the Center is situated a roundish Germen, supporting 3 Styles, crowned by single

single Stigmas. The Germen afterward becomes an oblong angular Capsule, with 3 Cells, filled with small brown Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn. The Root is perennial, so will continue many Years, and if the Seeds are permitted to scatter, the Plants will come up in too great Plenty, so as to be very troublesome Weeds. The Leaves and Flowers of this are used in Medicine; it is esteemed an excellent vulnerary Plant, and of great Service in Wounds, Bruises, and Contusions; there is a compound Oil made from this Plant, of great Use in the foregoing Accidents. From the Stamina of the Flower is expressed a red Juice, which is sometimes used in Colouring, but fades very soon.

The 2d Sort hath square Stalks, which rise about the same Height with the first, but do not branch so much. The Leaves are shorter and broader than those of the first, and have no pellucid Spots. The Flowers sit on short Foot Stalks at the End of the Branches, which are shaped like those of the other. This flowers and seeds the same Time with the other, and will propagate in as great Plenty if the Seeds are permitted to scatter.

The 3d Sort grows naturally in *Sicily*, *Spain*, and *Portugal*; this rises with shrubby Stalks about 3 Feet high, sending out small Branches at each Joint opposite, garnished with oblong oval Leaves, placed by Pairs, sitting close to the Stalks. The Flowers are produced in Clusters at the End of the Branches, they are composed of 5 oval yellow Petals, with a great Number of Stamina, longer than the Petals, and 3 Styles longer than the Stamina. The Germen which supports these, afterward becomes an oval Capsule with 3 Cells, filled with small Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn.

The 4th Sort grows naturally in the *Canary Islands*, so was formerly preserved in Green-houses during the Winter Season, but is found to be hardy enough to resist the greatest Cold of this Country, so is now cultivated in the Nurseries as a flowering Shrub; this rises with a shrubby Stalk, 6 or 7 Feet high, dividing into Branches upward, garnished with oblong Leaves set by Pairs close to the Branches. The Flowers are produced at the End of the Stalks in Clusters, and are very like those of the former Sort, having a great Number of Stamina, longer than the Petals; this flowers the same Time with the former, and perfects its Seeds in Autumn. Both these Plants have a very strong Odour like that of a Goat, so that where the Plants grow in large Quantities, the Scent is carried by the Wind to a great Distance, or if the Leaves are handled, they emit the same Odour.

These 2 Sorts are propagated by Suckers, which are plentifully sent forth from the old Plants. The best Season for taking off these Suckers is in *March*, just before they begin to shoot; they should be planted in a light dry Soil, in which they will endure the severest Cold of our Climate very well. They may also be propagated by Cuttings, which should be planted at the same Season; or by Seeds which must be sown in *August* or *September*, which is as soon as they are ripe, for if they are kept till Spring, few of them will grow; but as they multiply so fast by Suckers, the other Methods of propagating them are seldom practised in *England*.

The 5th Sort grows naturally on Mount *Olympus*,

where it was discovered by Sir *George Wheeler*, who sent the Seeds to the *Oxford Garden*; this rises with many upright ligneous Stalks, about a Foot high, garnished with small Spear-shaped Leaves sitting close to the Stalks by Pairs opposite. The Flowers are produced at the Top of the Stalks, 3 or 4 together, they are composed of 5 oblong Petals, of a bright yellow Colour, with a great Number of Stamina, of unequal Lengths, some being longer, and others shorter than the Petals, terminated by small roundish Summits. In the Center is situated an oval Germen, supporting 3 slender Styles, longer than the Stamina. The Germen becomes an oval Capsule with 3 Cells filled with small Seeds. This flowers in *July* and *August*, and in warm Seasons ripens its Seeds in Autumn.

This Plant is usually propagated by parting the Roots, because the Seeds do not always ripen in this Country; the best Time for doing this is in *September*, that the Plants may have Time to get Root before Winter; this Sort will live in the open Air, if planted in a warm Situation and a dry Soil, but it will be proper to keep a Plant or two in Pots, to be sheltered under a Frame in Winter, lest in very severe Winters, those in the open Air should be destroyed. If this is propagated by Seeds, they should be sown soon after they are ripe, in Pots filled with light Earth, and placed under a Frame in the Winter, to shelter them from Frost, and in Spring the Plants will appear; when these are fit to remove, some of them may be planted in a warm Border, and others into Pots, and treated as the old Plants.

The 6th Sort rises with a shrubby Stalk 7 or 8 Feet high, with a reddish Bark, and sends out upward many smaller Branches; these are garnished with oval Heart-shaped Leaves, whose Base sits close to the Stalks, they are placed by Pairs opposite. The Flowers are produced at the End of the Stalks in Clusters, they are smaller than those of the third Sort, and have obtuse Empalements. The Stamina are longer than the Petals, and are of a deeper Colour. The Flowers are succeeded by conical Capsules of a purplish red Colour, having 3 Cells, filled with small Seeds. It flowers in *May*, *June*, and *July*, and the Seeds ripen in Autumn. This is now propagated in the Nurseries as a flowering Shrub, and may be treated as the third and 4th Sorts.

The 7th Sort was first brought to *England* from *Constantinople*, but has long been very common in the *English* Gardens, for the Roots spread and increase very fast, where it is permitted to stand long unremoved. The Stalks are slender, and incline downward, they are garnished with oval, Spear-shaped, smooth Leaves, placed by Pairs, sitting close to the Stalks. The Flowers are produced at the End of the Stalks; these are very large, and of a bright yellow Colour, with a great Number of Stamina, which stand beyond the Petals; there are 5 Styles in each Flower, of the same Length with the Stamina. The Flowers are succeeded by pyramidal Seed Vessels with 5 Cells, containing many small Seeds. It flowers in *June* and *July*.

This Plant is easily propagated by parting the Root; the best Time for this is in *October*, that the Plants may be well established before the Drought of Spring, otherwise they will not produce many Flowers. As this will grow under Trees, it is a very proper Plant to place under

der Shrubs and Trees to cover the Ground, where they will make a good Appearance during their Season of flowering.

The 8th Sort grows naturally in the Island of *Minorca*, from whence the Seeds were sent to *England*, by Mr. *Salvador*, an Apothecary at *Barcelona*, in the Year, 1718; this rises with a slender shrubby Stalk, about 2 Feet high, sending out several weak Branches of a reddish Colour, marked where the Leaves have fallen off with a Cicatrice. The Leaves are small, oval, and waved on their Edges, having several small Protuberances on their under Side; these sit close to the Stalks, half embracing them with their Base. The Flowers are produced at the Top of the Stalks, they are large, of a bright yellow Colour, with a great Number of Stamina, a little shorter than the Petals; these Flowers have 5 Styles, and are succeeded by pyramidal Capsules with 5 Cells, which have a strong Smell of Turpentine, and are filled with small brown Seeds; this Plant has a Succession of Flowers great Part of the Year, which renders it valuable; it is too tender to live through the Winter in the open Air in *England*, but requires no artificial Heat; if the Plants are placed in a dry airy Glass Case in Winter, where they may be protected from Frost, and enjoy a good Share of fresh Air in mild Weather, they will thrive better than in a warmer Situation; but they must not be in a damp Air, for their Shoots soon grow mouldy and decay with Damp, nor should the Plants have much Water during the Winter, but in Summer they should be exposed in the open Air, and in warm Weather they should be gently watered 3 Times a Week; they should have a loose sandy Soil, not over rich. This is propagated by Cuttings, which should be planted in *June*, in Pots filled with light Earth, and plunged into a hot Bed, whose Heat is declining, shading them from the Sun in the Heat of the Day, and now and then refreshing them with Water; these Cuttings, so managed, will put out Roots in 6 or 7 Weeks, when they should be carefully taken up, and each planted into a separate small Pot, placing them in the Shade till they have taken new Root, and then they may be removed to a sheltered Situation, where they may remain till the Frost comes, then they should be removed into Shelter.

If these are propagated by Seeds, they should be sown in Autumn, as before directed for the fifth Sort, and the Plants treated in the same Manner as those raised from Cuttings.

The 9th Sort is the common Tutsan, or Park Leaves, sometimes used in Medicine. It grows naturally in Woods in several Parts of *England*, so is not often admitted into Gardens; this hath a shrubby Stalk, which rises 2 Feet high, sending out some small Branches toward the Top; these, and also the Stalks are garnished with oval Heart-shaped Leaves, sitting close to them with their Base, they are placed opposite by Pairs at every Joint. The Flowers are produced in small Clusters at the End of the Stalk; these are yellow, but smaller than either of the Sorts here mentioned, they have many long Stamina, which stand out beyond the Flower, and 3 Styles. The Germen afterward turns to a roundish Fruit, covered with a moist Pulp, which, when ripe, is black. The Capsule has 3 Cells, containing small Seeds.

It flowers in *June*, and the Seeds are ripe in Autumn. It hath a perennial Root, and may be propagated by parting it in Autumn; it loves Shade, and a strong Soil.

The 10th Sort grows naturally in *North America*; this rises with an upright herbaceous Stalk, 3 Feet high, sending out several small Branches upward, which come out by Pairs opposite, and are garnished with oblong Leaves, placed opposite, which half embrace the Stalk with their Base. At the End of each Stalk is produced one pretty large yellow Flower, with an obtuse Empalement, having many Stamina, equal in Length with the Petals, and 5 Styles so closely joined as to appear but one. The Stigmas are reflexed, which denote their Number. This Sort seldom ripens Seeds here, so is propagated by parting the Roots. The best Time for this is in Autumn; it should have a light Soil, and an open Situation. The Flowers appear the latter End of *July*, and in *August*.

The 11th Sort grows naturally in *China*, from whence the Seeds were brought to the Right Hon. the Earl of *Northumberland*, and the Plants raised in his Lordship's curious Garden at *Stanwick*, and by his Generosity, the *Chelsea* Garden was furnished with this Plant.

The Root of this Plant is composed of many ligneous Fibres, which strike deep in the Ground, from which arise several shrubby Stalks, near 2 Feet high, covered with a purplish Bark, and garnished with stiff smooth Leaves, about 2 Inches long, and a Quarter of an Inch broad, placed by Pairs opposite, sitting close to the Stalk, they are of a lucid green on their upper Side, and gray on their under, having many transverse Veins running from the Mid-rib to the Border. The Flowers are produced at the Top of the Stalks, growing in small Clusters, each standing on a short distinct Foot Stalk; these have an Empalement of 1 Leaf, divided into 5 obtuse Segments, almost to the Bottom, which is of a deep purple Colour. The Flower is composed of 5 large obtuse Petals of a bright yellow Colour; these are concave, and in the Center is situated an oval Germen supporting a single Style, crowned by 5 slender Stigmas, which bend on one Side; the Style is attended by a great Number of Stamina, longer than the Petals, and terminated by roundish Summits.

This Plant continues in flower great Part of the Year, which renders it the more valuable, and if it is planted in a very warm Situation, it will live in the open Air, but those Plants which stand abroad will not flower in Winter, as those do which are removed into Shelter in Autumn.

It may be propagated by Slips from the Root, or by laying down the Branches; if by Slips, they should be planted in Spring on a moderate hot Bed, which will forward their putting out new Roots; the Layers should also be laid down at the same Time, which will have taken Root by Autumn, when they may be transplanted into Pots, and sheltered under a Frame in Winter, and in the Spring, Part of these may be planted in a warm Border, and the others continued in Pots to be screened in Winter, lest those in the open Air should be killed.

HYPERICUM FRUTEX. See *Spiræa*.

HYPOPHYLLOSPERMOUS PLANTS, are such Plants as bear their Seeds on the Backsides of their Leaves.

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HYSSOPUS. *Tourn. Inst. R. H. 200. Tab. 95. Lin. Gen. Pl. 628. Hyssop; in French, Hysope.*

The Characters are,

The Empalement of the Flower is oblong, cylindrical, breaked, and permanent. It is of 1 Leaf, cut into 3 acute Parts at the Top. The Flower is of 1 Petal, of the grinning Kind, with a narrow cylindrical Tube, the Length of the Empalement. The Chaps are inclining. The upper Lip is short, plain, roundish, erect, and indented at the Top. The under Lip is trifid, the 2 Side Segments being shorter than the Middle one, which is crenated. It hath 4 Stamina, which stand apart, 2 of them are longer than the Petal, the other 2 shorter, terminated by single Summits. It hath 4 Germina with a single Style situated under the upper Lip, crowned by a bifid Stigma. The Germina afterward become so many oval Seeds fitting in the Empalement.

The Species are,

1. *HYSSOPUS spicis secundis. Hort. Cliff. 304.* Hyssop with fruitful Spikes. *Hyssopus officinarum cœrulea seu spicata. C. B. P. 217.* Hyssop of the Shops with blue Spikes, or the common Hyssop.

2. *HYSSOPUS spicis brevioribus, verticillis compactis.* Hyssop with shorter Spikes, and Whorls more compact. *Hyssopus rubro flore, C. B. P. 217.* Hyssop with a red Flower.

3. *HYSSOPUS spicis longissimis, verticillis distantibus.* Hyssop with the longest Spikes, and Whorls at a greater Distance. *Hyssopus verticillis florum varioribus. Houst.* Hyssop with the Whorls of Flowers thinly ranged.

4. *HYSSOPUS caule acuto quadrangulo. Hort. Upsal. 163.* Hyssop with an acute square Stalk. *Sideritis Canadensis altissima, scrophulariæ folio, flore flavescente. Tourn. Inst. 192.* Tallest Canada Ironwort with a Figwort Leaf, and a yellowish Flower.

5. *HYSSOPUS corollis transversalibus, staminibus inferioribus corollâ brevioribus. Hort. Upsal. 162.* Hyssop with transverse Petals, and the lower Stamina shorter than the Petal. *Nepeta floribus obliquis. Dill. Cat Mint* with oblique Flowers.

The 1st Sort, which is the only one cultivated for Use, grows a Foot and a Half high. The Stalks are first square, but afterward become round, their lower Parts are garnished with small Spear-shaped Leaves, placed opposite, without Foot Stalks, and 7 or 8 very narrow erect Leaves (or Bractææ) rising from the same Joint. The upper Part of the Stalk is garnished with Whorls of Flowers, the lower ones standing half an Inch apart, but the upper are almost joined together. The upper Lip of the Flower is indented at the Top, and the under is cut into 3 Parts, the Middle being deeply indented at the Point. There are 4 Stamina in each Flower, which spread a Distance from each other, the 2 upper are the shortest, which are situated on each Side the upper Lip; the 2 longer stand close to the two Side Segments, they are terminated by twin Summits. At the Bottom of the Tube are situated 4 naked Germina supporting a slender Style, sitting close to the upper Lip, crowned by a bifid Stigma; these Germina become 4 oblong black Seeds, sitting in the Empalement. The whole Plant has a strong aromattick Scent. It flowers in July and August, and the Seeds ripen in September, but the Roots will abide many Years; it grows naturally in

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the Levant. There is a Variety of this with white Flowers, but doth not differ from the blue in any other Particular.

The 2d Sort doth not grow so tall as the first; the Stalks branch more, and the Spikes of Flowers are much shorter. The Whorls are closer together, and have long narrow Leaves situated under each. The Flowers are of a fine red Colour, and appear at the same Time with the former. This Sort is not quite so hardy as the common; for in 1739, the Plants were all destroyed by the Cold; this is certainly a distinct Species, for I cultivated it from Seeds 20 Years, and never observed it to vary.

The 3d Sort grows much taller than either of the other. The Leaves are narrower, the Whorls of Flowers farther asunder, the Spikes of Flowers much longer, the Flowers larger, and of a deeper blue than those of the common Sort, and the Plant hath not so strong an Odour. It flowers at the same Time as the first.

These 3 Sorts of Hyssop are propagated either by Seeds or Cuttings; if by the Seeds, they must be sown in March, on a Bed of light sandy Soil, and when the Plants come up, they should be transplanted out to the Places where they are to remain, placing them at least a Foot asunder each Way; but if they are designed to abide in those Places for a long Time, 2 Feet Distance will be small enough, for they grow pretty large, especially if not frequently cut, to keep them within Compass; they thrive best on a poor dry Soil, in which Situation they will endure the Cold of our Climate better than when planted on a richer Soil. If you would propagate them by Cuttings, they should be planted in April or May, in a Border where they may be defended from the violent Heat of the Sun, and being frequently watered, they will take Root in about 2 Months, after which, they may be transplanted where they are to continue, managing them as before directed for the seedling Plants.

The 1st Sort was formerly more cultivated than at present in England, it being the Sort commonly used in Medicine. The other Species are preserved in curious Gardens for Variety, but they are seldom cultivated for Use.

They are very hardy Plants, which will endure the Cold of our Winters in the open Air, provided they are planted in a dry undunged Soil, for when planted in a rich Soil, they grow very luxuriant in Summer, and are less able to resist the Cold in Winter; so that when any of these Plants grow out of the Joints of old Walls (as they frequently do,) they will resist the most severe Frost, and will be much more aromattick, than those which grow in a rich Soil.

The 4th Sort grows naturally in North America; this hath a perennial Root, and an annual Stalk, which decays in Autumn. It rises with an upright square Stalk, near 4 Feet high, garnished with oblique Heart-shaped Leaves, sawed on their Edges, and end in acute Points; they are placed by Pairs opposite on short Foot Stalks. The Flowers grow in close thick Spikes, 4 or 5 Inches long at the Top of the Stalks. The upper Lip is divided into 2 roundish Segments, the lower one is divided into 3 Parts, the 2 Side Segments standing erect, and the middle one is reflexed, and acutely sawed at the End. The 2 upper Stamina, which are situated on each

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Side the upper Lip are the longest, the other two shorter join the two side Segments of the lower Lip; they are terminated by small Summits. The Germina are situated at the Bottom of the Tube, having a slender Style under the upper Lip, crowned by a bifid Stigma. The Germina become 4 oblong brown Seeds, sitting in the tubulous Empalement. This Sort flowers in July, and the Seeds ripen in September.

There is a Variety of this Sort with purple Stalks, and purplish Flowers. The Leaves stand on longer Foot Stalks, and the Spikes of Flowers are thicker, but I cannot say if it is a distinct Species, or only a Variety. It grows naturally in the same Country with the other. It is titled, *Betonica maxima, folio scrophulariae, floribus incarnatis*, by Herman. Par. Bat. 106.

The 5th Sort grows naturally in Siberia. The Seeds were sent me from the Imperial Garden at Petersburg, by the Title of *Lophanthus*, and afterward I received some from Holland, which were titled, *Nepeta floribus obliquis*. Dill. This is a perennial Plant with a strong fibrous Root, sending out many square Stalks, which divide into smaller Branches, garnished with oblong Leaves, crenated on their Edges, set on by Pairs opposite. The Flowers are produced at each Joint in small Clusters, 2 Foot Stalks arising from the Base of the Leaves, about half an Inch long, both inclining to one Side of the Stalk;

each of these Foot Stalks divide again into 2 smaller, and these do each support a Cluster of 4 or 5 Flowers, which have swelling tubulous Empalements, cut into 5 acute Segments at the Top. The Tube of the Petal is longer than the Empalement. The Lips of the Flower are oblique to it, being situated horizontally. The 2 upper Stamina, and the Style, stand out beyond the Petal, but the other are shorter. The Flowers are blue, and appear in June and July, and the Seeds ripen in September.

Both these Sorts are very hardy, and may be easily propagated by Seeds, which should be sown in Autumn, for those sown in the Spring do often lie a Year in the Ground before they vegetate; when the Plants come up, they must be kept clean from Weeds, and thinned where they are too close. The following Autumn they should be transplanted where they are to remain, and the Plants will flower in Summer, and produce Seeds, but the Roots will abide some Years.

It hath been a great Dispute amongst modern Writers, whether the Hyssop now commonly known is the same mentioned in Scripture; about which there is great Room to doubt, there being very little Grounds to ascertain that Plant, though it is most generally thought to be the Winter Savory, which Plant is now in great Request amongst the Inhabitants of the Eastern Countries, for outward Washings or Purification.

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JACEA. See Centaurea.

JACOBÆA. See Senecio and Othonna.

JALAPA. See Mirabilis.

JASIONE. Lin. Gen. Pl. 896. This is the *Rapuntulus scabiosae capitulo caeruleo*. C. B. P. 22. Rampions with Scabious Heads. This Plant grows naturally on sterile Ground, in most Parts of England, and is rarely admitted into Gardens.

JASMINOIDES. See Cestrum and Lycium.

JASMINUM. Tourn. Infl. R. H. 597. Tab. 368. Lin. Gen. Pl. 17. [This Name is Arabick.] The Jasmine, or Jessamine Tree; in French, *Jasmin*.

The Characters are,

The Flower hath a tubulous Empalement of 1 Leaf, which is permanent, and cut into 5 Segments at the Brim, which are erect. The Flower is of 1 Petal, having a long cylindrical Tube, cut into 5 Segments at the Top, which spread open. It hath 2 short Stamina, terminated by small Summits, and situated within the Tube of the Petal. In the Center is situated a roundish Germen, supporting a slender Style, crowned by a bifid Stigma. The Germen turns to an oval Berry, with a soft Skin inclosing 2 Seeds, flat on those Sides which join, and convex on the other.

The Species are,

1. **JASMINUM foliis oppositis pinnatis, foliolis acuminatis.** Jasmine with winged Leaves placed opposite, whose Lobes end in acute Points. *Jasminum vulgatum*, flore albo. C. B. P. 397. The common white Jasmine.

2. **JASMINUM foliis alternis ternatis pinnatisque, ramis angulatis.** Hort. Upsal. 5. Jasmine with trifoliate

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and winged Leaves placed alternate, and angular Branches *Jasminum humile luteum*. C. B. P. 397. Dwarf yellow Jasmine, commonly called, The Italian yellow Jasmine.

3. **JASMINUM foliis alternis ternatis simplicibusque, ramis angulatis.** Hort. Cliff. 5. Jasmine with trifoliate and single Leaves placed alternate, and angular Branches. *Jasminum luteum, vulgò dictum bacciferum*. C. B. P. 398. The common yellow Jasmine.

4. **JASMINUM foliis oppositis pinnatis, foliolis brevioribus obtusis.** Jasmine with winged Leaves placed opposite, whose Lobes are shorter and obtuse. *Jasminum humilium, magno flore*. C. B. P. 398. The Spanish white, or Catalonian Jasmine with a larger Flower.

5. **JASMINUM foliis alternis ternatis, foliolis ovatis, ramis teretibus.** Jasmine with trifoliate Leaves placed alternate, whose Lobes are oval, and taper Branches. *Jasminum Indicum flavum odoratissimum*. Fer. Flor. The sweet scented yellow Indian Jasmine.

6. **JASMINUM foliis oppositis ternatis, foliolis cordato-acuminatis.** Jasmine with trifoliate Leaves placed opposite, whose Lobes are Heart-shaped and pointed. *Jasminum Azoricum trifoliatum, flore albo, odoratissimum*. H. A. The three leaved Azorian Jasmine, with very sweet white Flowers, commonly called, The Ivy leaved Jasmine.

7. **JASMINUM foliis lanceolatis oppositis integerrimis, calycibus acutioribus.** Jasmine with Spear-shaped Leaves placed opposite, and entire, and acute Empalements to the Flower.

The 1st Sort is the common white Jasmine, so generally

nerally known, as to need no Description. This grows naturally at *Malabar*, and in several Parts of *India*, yet has been long inured to our Climate, so as to thrive and flower extremely well, but never produces any Fruit in *England*; this hath weak trailing Branches, so requires the Assistance of a Wall or Pale to support them. It is easily propagated by laying down the Branches, which will take Root in one Year, and may then be cut from the old Plant, and planted where they are designed to remain: It may also be propagated by Cuttings, which should be planted early in the Autumn, and if the Winter should prove severe, the Surface of the Ground between them should be covered with Tan, Sea Coal Ashes, or Saw Dust, which will prevent the Frost from penetrating deep into the Ground, and thereby preserve the Cuttings; or where these are wanting, some Peas Haulm, or other light Covering should be laid over the Cuttings in hard Frost; but these must be removed when the Weather is mild, for they will keep off the Air and occasion Damps, which often destroy them.

When these Plants are removed, they should be planted where they are designed to be continued, which should be either against some Wall, Pale, or other Fence, where the flexible Branches may be supported; for although it is sometimes planted as a Standard, and formed into a Head, yet it will be very difficult to keep it in any handsome Order; or if you do, you must cut off all the flowering Branches; for the Flowers are always produced at the Extremity of the same Year's Shoots, which, if shortened before the Flowers are blown, will entirely deprive the Trees of Flowers. These Plants should be permitted to grow rude in the Summer, for the Reason before given; nor should you prune and nail them until the Middle or latter End of *March*, when the frosty Weather is past; for if it should prove sharp frosty Weather after their rude Branches are pruned off, and the strong ones are exposed thereto, they are very often destroyed; and this Plant being very backward in shooting, there will be no Danger of hurting them by late pruning.

There are 2 Varieties of this with variegated Leaves, one with white, and the other yellow Stripes, but the latter is the most common: These are propagated by budding them on the plain Jasmine, and it often happens, that the Buds do not take, but yet they have communicated their gilded Miasma to the Plants; so that in a short Time after, many of the Branches, both above and below the Places where the Buds have been inserted have been thoroughly tinged, and the following Year I have often found very distant Branches, which had no other Communication with those which were budded than by the Root, as compleatly tinged as any any of the nearer Branches, so that the Juices must have descended into the Root.

The 2 striped Sorts should be planted in a warm Situation, especially the white striped; for they are much more tender than the plain, and are very subject to be destroyed by great Frosts, if exposed thereto; therefore the white striped should be planted to a South or South-west Aspect, and in very severe Winters their Branches should be covered with Mats or Straw, to prevent their being killed: The yellow striped is not so tender, so may be planted against Walls to East or West Aspects;

but these Plants with variegated Leaves, are not so much in Esteem as formerly.

The 2d Sort is frequently called, *Italian* yellow Jasmine by the Gardeners, the Plants being annually brought from thence, by those who come over with Orange Trees. These Plants are generally grafted on the common yellow Jasmine Stocks, so that if the Graft decays, the Plants are of no Value. This Sort is somewhat tenderer than the common, yet will it endure the Cold of our ordinary Winters, if planted in a warm Situation. The Flowers of this Kind are generally larger than those of the common yellow Sort, but have very little Scent, and are seldom produced so early in the Season. It may be propagated by laying down the tender Branches, as was directed for the common white Sort; or by budding or inarching it upon the common yellow Jasmine, the latter of which is preferable, as making the Plants hardier than those which are obtained from Layers: They should be planted against a warm Wall, and in very severe Winters will require to be sheltered with Mats, or some other Covering, otherwise they are subject to be destroyed. The Manner of Dressing and Pruning being the same as was directed for the white Jasmine, I shall not repeat it.

The 3d Sort was formerly more cultivated in the Gardens than at present, for as the Flowers have no Scent, so few Persons regard them. This hath weak angular Branches which require Support, and will rise to the Height of 8 or 10 Feet, if planted against a Wall or Pale; but the Plants do often produce a great Number of Suckers from their Roots, whereby they become troublesome in the Borders of the Pleasure Garden; and as they cannot be kept in any Order as Standards, so there are few of the Plants at present introduced into Gardens. It is easily propagated by Suckers or Layers.

The 4th Sort grows naturally in *India*, and also in the Island of *Tobago*, where the Woods are full of it; the late Mr. Robert Millar sent me over a great Quantity of it from thence. This hath much stronger Branches than the common white Sort, the Leaves are winged, and are composed of 3 Pair of short obtuse Lobes, terminated by an odd one, ending in an acute Point; these Lobes are placed closer than those of the common Jasmine, and are of a lighter green; the Flowers come out from the Wings of the Stalks, standing on Foot Stalks 2 Inches long, each sustaining 3 or 4 Flowers, of a bluish red on their Outside, but white within; the Tube of the Flower is longer, the Segments are obtuse, twisted at the Mouth of the Tube, and are of a much thicker Texture than those of the common Sort, so that there is no Doubt of its being a distinct Species; and the Reason for Dr. *Linnaeus's* supposing it to be so, was by Mistake; for as these Plants are generally grafted on Stocks of the common Jasmine, there are always Shoots coming out from the Stocks of that Sort, which, if permitted to stand will produce Flowers; and these do often starve and kill the Grafts, so that there will be only the common Sort left; and this has been the Case with some Plants which he examined, therefore supposed the Difference of the other Sort was wholly owing to Culture; whereas if he had only observed the Difference of their Leaves,

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he would have certainly made two distinct Species of them.

This Plant is propagated by budding or inarching it upon the common white Jasmine, on which it takes very well, and is rendered hardier than those which are on their own Stocks. But those of this Kind being brought over from *Italy* every Spring in so great Plenty, they are seldom raised here: I shall therefore proceed to the Management of such Plants as are usually brought into *England* from the Place above-mentioned, which are generally tied up in small Bunches, containing four Plants, and their Roots wrapped about with Moss, to preserve them from drying; which, if it happen that the Ship has a long Passage, will often occasion them to push out strong Shoots from their Roots, which must always be taken off before they are planted, otherwise they will exhaust the whole Nourishment of the Plant, and destroy the Graft.

In making Choice of these Plants, you should carefully observe if their Grafts are alive, and in good Health: For if they are brown and shrunk they will not push out, so that there will be only the Stock left, which is of the common Sort.

When you receive these Plants, you must clear the Roots of the Moss, and all decayed Branches should be taken off; then place their Roots into a Pot or Tub of Water, which should be set in the Green-house, or some other Room, where it may be screened from the Cold; in this Situation they may continue 2 Days, after which you must prune off all the dry Roots, and cut down the Branches within 4 Inches of the Place where they are grafted, and Plant them into Pots filled with fresh light Earth; then plunge the Pots into a moderate hot Bed of Tanners Bark, observing to water and shade them, as the Heat of the Season may require. In about 3 Weeks or a Month's Time they will begin to shoot, when you must carefully rub off all such as are produced from the Stock below the Graft; and you must now let them have a great Share of Air, by raising the Glasses in the Heat of the Day; and as the Shoots extend, they should be topped, to strengthen them, and by Degrees, should be hardened to endure the open Air, into which they should be removed in *June*, but must have a warm Situation the first Summer; for if they are too much exposed to the Winds, they will make but indifferent Progress, being rendered somewhat tender by the hot Bed. If the Summer proves warm, and the Trees have succeeded well, they will produce some Flowers in the Autumn following, though they will be few in Number, and not near so strong as they will be the succeeding Years, when the Trees are stronger and have better Roots.

These Plants are commonly preserved in Green-houses, with Oranges, Myrtles, &c. and during the Winter Season, will require to be frequently watered, which should be performed sparingly each Time, especially in cold Weather, for too much Wet at that Season will be apt to rot the Fibres of their Root; they should also have a great Share of fresh Air when the Weather will permit, for which Purpose they should be placed in the coolest Part of the Green-house, among Plants that are hardy, where the Windows may be opened every Day, except in frosty Weather; nor

should they be crowded too close among other Plants, which often occasions the tender Parts of their Shoots to grow mouldy and decay. In *April* the Shoots of these Plants should be shortened down to 4 Eyes, and all the weak Branches should be cut off; and if you have the Conveniency of a Glass Stove, or a deep Frame, to place the Pots in at that Season, to draw them out again, it will be of great Service in forwarding their flowering; yet still you should be careful not to force them too much: And as soon as they have made Shoots 3 or 4 Inches long, the Glasses should be opened in the Day Time, that the Plants may, by Degrees, be inured to the open Air, into which they should be removed by the latter End of *May* or the Beginning of *June*, otherwise their Flowers will not be so fair, nor continue so long. If the Autumn proves favourable, these Plants will continue to produce fresh Flowers until *Michaelmas*; and sometimes when they are strong, they will continue flowering till *November*, or after; but then they must have a great share of Air when the Weather is mild and will admit of it, otherwise the Flower Buds will grow mouldy and decay.

But notwithstanding most People preserve these Plants in Green-houses, yet they will endure the Cold of our ordinary Winters in the open Air, if planted against a warm Wall, and covered with Mats in frosty Weather; they will also produce ten Times as many Flowers in one Season as those kept in Pots, and the Flowers will likewise be much larger; but they should not be planted abroad till they have some Strength, so that it will be necessary to keep them in Pots 2 or 3 Years, whereby they may be sheltered from the Frost in Winter; and when they are planted against the Wall, which should be in *May*, that they may take good Root in the Ground before the succeeding Winter, you must turn them out of the Pots, preserving the Earth to their Roots; and having made Holes in the Border where they are to be planted, you should place them therein, with their Stems close to the Wall; then fill up the Holes round their Roots with good fresh rich Earth, and give them some Water to settle the Ground about them, and nail up their Shoots to the Wall, shortening such of them as are very long, that they may push out new Shoots below to furnish the Wall, continuing to nail up all the Shoots as they are produced. In the Middle, or toward the latter End of *July*, they will begin to flower, and continue to produce new Flowers until the Frost prevents them; which when you observe, you should carefully cut off all the Tops of such Shoots as have Buds formed upon them, as also those which have the Remains of faded Flowers left; for if these are suffered to remain on, they will soon grow mouldy, especially when the Trees are covered, and thereby infect many of the tender Branches, which will greatly injure the Trees.

Toward the Middle of *November*, if the Weather be cold and the Nights frosty, you must begin to cover your Trees with Mats, which should be nailed over them pretty close; but this should be done when the Trees are perfectly dry, otherwise the Wet being lodged upon the Branches, will often cause a Mouldiness upon them, and the Air being excluded therefrom, will rot them in a short Time: It will also be very necessary to

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take off these Mats as soon as the Weather will permit, to prevent this Mouldiness, and only keep them close covered in frosty Weather; at which Time you should also lay some Mulch upon the Surface of the Ground, about their Roots, and fasten some Bands of Hay about their Stems, to guard them from the Frost; and in very severe Weather, you should add a double or treble Covering of Mats over the Trees; by which Method, carefully performed, you may preserve them through the hardest Winters. In the Spring, as the Weather is warmer, you should by Degrees take off the Covering; but you should be careful not to expose them too soon to the open Air, as also to guard them against the Morning Frosts and dry easterly Winds, which often reign in *March*, to the no small Destruction of tender Plants, if they are exposed thereto; nor should you quite remove your Covering until the Middle of *April*, when the Season is settled, at which Time you should prune the Trees, cutting out all decayed and weak Branches, shortening the strong ones to about 2 Feet long, which will cause them to shoot strong, and produce many Flowers.

There is a Variety of this with semi-double Flowers, which is at present very rare in *England*, and only to be found in some very curious Gardens; though in *Italy* it is pretty common, from whence it is sometimes brought over amongst the single; the Flowers of this Kind have only 2 Rows of Leaves, so that it is rather regarded for its Curiosity, than for any extraordinary Beauty in the Flowers. This may be propagated by budding it on the common white Jasmine, as hath been directed for the single, and must be treated in the same Manner.

The 5th Sort grows naturally in *India*; this rises with an upright woody Stalk 8 or 10 Feet high, covered with a brown Bark, and sending out several Branches which want no support; these are closely garnished with trifoliate Leaves of a lucid green, which are placed alternate on the Branches; the two Side Lobes of these Leaves which grow opposite, are much less than the end one; they are oval and entire, continuing green all the Year: The Flowers are produced at the End of the Shoots in Bunches, which have long slender Tubes, and are divided at the Top into 5 obtuse Segments which spread open; these Flowers are of a bright yellow, and have a most grateful Odour. They come out in *July*, *August*, *September*, and *October*, and sometimes continue to the End of *November*; they are frequently succeeded by oblong oval Berries, which turn black when ripe, and have each two Seeds.

This Sort of Jasmine is propagated either by Seeds, or laying down their tender Branches; if you would propagate them by Seeds, which they often produce in *England*, you should make a moderate hot Bed in the Spring, into which you should plunge some small Pots, filled with fresh light Earth; and in a Day or two after when you find the Earth in the Pots warm, you must put the Seeds therein; about 4 in each Pot will be sufficient, covering them about an Inch thick with the same light Earth, and observe to refresh the Pots with Water as often as you shall perceive the Earth dry; but do not give them too much at each Time, which would be apt to rot the Seeds.

In about 6 or 8 Weeks after sowing, the Plants will appear above Ground, at which Time it will be necessary to remove the Pots into another fresh hot Bed, of a moderate Temperature, in order to bring the Plants forward; you must also be careful to water them as often as is necessary, and in the great Heat of the Day the Glasses should be tilted pretty high, and shaded with Mats to prevent the Plants from being scorched with Heat. About the Middle of *May* you should begin to harden them to the open Air, by taking off the Glasses when the Weather is warm; but this must be done cautiously, for you should not expose them to the open Sun in a very hot Day at first, which would greatly injure them; but rather take off the Glasses in warm cloudy Weather at first, or in gentle Showers of Rain, and so by Degrees inure them to bear the Sun; and in *June* you should take the Pots out of the hot Bed, and carry them to some well sheltered Situation, where they may remain until the Beginning of *October*; at which Time they must be carried into the Green-house, observing to place them where they may enjoy as much free Air as possible when the Windows are opened, as also to be clear from the Branches of other Plants.

During the Winter Season they will require to be often watered, but you must be careful not to give them too much at each Time; and in *March* you must remove these Plants each into a separate Pot, being careful not to take the Earth from their Roots; and if, at this Time, you plunge them into a fresh moderate hot Bed, it will greatly facilitate their rooting again, and be of great Service to the Plants; but when they are rooted, you must give them a great deal of Air; for if you draw them too much, they will become weak in their Stems, and incapable to support their Heads, which is a great Defect in these Trees.

You must also harden them to the open Air, into which they should be removed about the Middle of *May*, observing, as was before directed, to place them in a Situation that is defended from strong Winds, which are injurious to these Plants, especially while they are young. In Winter house them as before, and continue the same Care, with which they will thrive very fast, and produce annually great Quantities of Flowers.

These Plants are pretty hardy, and will require no other Care in Winter, than only to defend them from hard Frosts; nor do I know whether they would not live in the open Air, which should be tried by planting some against a warm Wall for that Purpose; and I think we have little Reason to doubt of the Success, since they are much hardier than the *Spanish*; but there is this Difference between them, *viz.* these Plants have large, thick, ever-green Leaves, so that if they were covered with Mats, as was directed for the *Spanish* Jasmine, the Leaves would rot and decay the Shoots; but as these will only require to be covered in extreme Frost, so if their Roots are well mulched, and a Mat or two loosely hung over them in ordinary Frosts, it will be sufficient; and these Mats being either rolled up, or taken quite off in the Day, there will no great Danger of their being hurt, which only can proceed from being too long close covered.

In Spring these should be pruned, when you should cut off all decayed Branches; but you must not short-

ten any of the other Branches, as was directed for the *Spanish* Sort, for the Flowers of this Kind are produced only at the Extremity of the Branches, which, if shortened, would be cut off; and these growing of a more ligneous Substance than the other, will not produce Shoots strong enough to flower the same Year.

If you would propagate this Plant from Layers, the Shoots should be laid down in *March*; and if you give them a little Cut at the Joint, as is practised in laying Carnations, it will promote their rooting: You should always observe to refresh them often with Water, when the Weather is dry; which if carefully attended to, the Plants will be rooted by the succeeding Spring, fit to be transplanted, when they must be planted in Pots filled with light Earth, and managed as was before directed for the Seedling Plants.

This Sort is frequently propagated, by inarching the young Shoots into Stocks of the common yellow Jasmine, but the Plants so raised do not grow so strong as those on their own Stock; besides, the common yellow Jasmine is very apt to send out a great Number of Suckers from the Root, which renders the Plants unfightly; and if these Suckers are not constantly taken off, as they are produced, they will rob the Plants of their Nourishment.

The 6th Sort grows naturally in the *Azores*; this hath long slender Branches which require Support, and may be trained 20 Feet high; they are garnished with trifoliate Leaves, whose Lobes are large and Heart-shaped, of a lucid green, and placed opposite on the Branches; they continue all the Year. The Flowers are produced at the End of the Branches, in loose Bunches; they have long narrow Tubes, which at Top are cut into 5 Segments spreading open; they are of a clear white, and have a very agreeable Scent. This flowers at the same Time with the former, the Gardeners call it frequently the Ivy-leaved Jasmine.

The *Azorian* Jasmine is also pretty hardy, and requires no more Shelter than only from hard Frosts; and I am apt to think, if this Sort was planted against a warm Wall, and managed, as hath been directed for the yellow *Indian* Jasmine, it would succeed very well; for I remember to have seen some Plants of this Kind growing against a Wall in the Gardens at *Hampton-Court*, where they had endured the Winter, and were in a more flourishing State than ever I saw any of the Kind in Pots, and produced a greater Quantity of Flowers. These Plants are propagated as the yellow *Indian*, and require the same Management.

These Plants are as deserving of a Place in all Green-houses, as any which are there preserved; for their Leaves being of a shining green, make a good Appearance all the Year; and their Flowers having a fine Scent, and continuing so long in Succession, renders them very valuable.

The 7th Sort was brought from the *Cape of Good Hope*, by Capt. *Hutchinson* of the *Gedolpin*, who discovered it growing naturally, a few Miles up the Land from the Sea, being drawn to it by the great Fragrance of its Flowers, which he smelt at some Distance from the Plant, which was then in full flower; and after having viewed the Plant, and remarked the Place of its Growth, he returned thither the following Day with

proper Help, and a Tub to put it in, and caused it to be carefully taken up, and planted in the Tub with some of the Earth on the Spot, and conveyed on Board his Ship, where it continued flowering great Part of the Voyage to *England*, where it arrived in good Health, and has for 3 Years continued flowering, in the curious Garden of *Richard Warner*, Esq; at *Woodford* in *Essex*, who was so obliging as to favour me with Branches of this curious Plant in flower, to embellish one of the Numbers of my Figures of Plants, where it is represented in the 180th Plate.

This Plant seems not to have been known to any of the Botanists, for I have not met with any Figure or Description of it in any of the Books; there is one Sort which is figured in the *Malabar* Garden, and also in *Burman's* Plants of *Ceylon*, which approaches near this; it is titled, *Nandi ervatum major*. *Hort. Mal.* But it differs in this, in having longer and narrower Leaves, and the Tube of the Flower is larger, and the Segments do not spread so much as this; but it is surprizing that this Plant should be unknown to the People at the *Cape of Good Hope*, for there was not one Plant of it in their curious Garden, not could the Captain see any other Plant of it but that which he brought away.

The Stem of this Plant is large and woody, sending out many Branches, which are first green, but afterward the Bark becomes gray, and is smooth; the Branches come out by Pairs opposite, and have short Joints; the Leaves are also set by Pairs opposite, close to the Branches; they are 5 Inches long, and 2 Inches and a Half broad in the Middle, lessening to both Ends, terminating in a Point; they are of a lucid green, having several transverse Veins from the Mid-rib to the Borders; they are entire, and of a thick Consistence. The Flowers are produced at the End of the Branches, sitting close to the Leaves; they have a tubulous Emplacement, with 5 Corners or Angles, cut deep at the Brim, into 5 long narrow Segments, ending in acute Points: The Flower hath but 1 Petal, for although it is cut into many deep Segments at the Top, yet these are all joined in one Tube below; some of these Flowers are much more double than others, having 3 or 4 Orders of Petals; these, which have so many, have only a bifid Stigma; but those which are less double, have trifid Stigmas. All those Flowers which I have examined have no Stamina, which may be occasioned by the Fullness of the Flowers, as is often observed in many Kinds of Plants, whose Flowers have a greater Number of Petals than usual; and some of these want both Parts of Generation, but many of them have no male Parts. This Flower, when fully blown, is as large as a middling Rose, and some of them are as double as the *Damask* Rose; they have a very agreeable Odour; on the first Approach it is something like that of the *Orange* Flower, but when more closely smelt to, has the Odour of the common double white *Narcissus*. The Season of this Plant flowering in *England*, is in *July* and *August*, but in its native Country it is supposed to flower great Part of the Year; for Capt. *Hutchinson*, who brought the Plant over, said there was a Succession of Flowers on it, till the Ship arrived in a cold Climate, which put a Stop to its Growth.

As this Plant is new in *Europe*, and having lost the
Tops

Tops of its Branches by the Cold, after the Ship arrived in the *British* Channel, there has been little Opportunity of propagating it; but some of the Cuttings which have been lately planted, seem to preserve their Verdure so well, as to give great Hopes of their putting out Roots; but if these should fail, there can be little Doubt of the Layers putting out Roots, nor of their taking upon Stocks of the yellow *Indian* Jasmine when grafted by Approach, so that in a few Years it may be dispersed into many Gardens. It requires a Stove in Winter, and if it is plunged into the Tan Bed, it will thrive better than in a dry Stove; but it should not be kept too warm, for that will draw the Branches weak, and cause the Plants not to produce so many Flowers.

JASMINUM ARABICUM. See Coffee and Nyc-tanthes.

JASMINUM ILICIS FOLIO. See Lantana.

JASMINE, the Arabian. See Nycanthes.

JASMINE, the Persian. See Syringa.

JATROPHA. Lin. Gen. Pl. 961. Manibot. Tourn. Inst. R. H. 658. Tab. 438. Calada, or Cassava; in French, *Cassave*.

The Characters are,

It hath male and female Flowers in the same Plant; the male Flowers have a scarce visible Empalement; they are Salver-shaped and of 1 Petal, with a short Tube, whose Brim is cut into 5 roundish Segments which spread open; they have 10 Awl-shaped Stamina, 5 being alternately shorter than the other; these are joined close together, standing erect in the Center of the Flower, and terminated by roundish loose Summits. The female Flowers, which are situated in the same Umbel, have no Empalement, but have 5 Petals spread open like a Rose. In the Center is a roundish Germen with 3 deep Furrows, supporting 3 Styles crowned by single Stigmas. The Germen becomes a roundish Capsule with 3 Cells, each containing 1 Seed.

The Species are,

1. **JATROPHA foliis palmatis, lobis lanceolatis integerrimis lævibus.** Lin. Sp. Pl. 1007. *Jatropha* with Hand-shaped Leaves, whose Lobes are Spear-shaped, entire and smooth. Manibot Theveti, juca & cassavi. J. B. 2. 794. The Manibot of Thevet, and the Juca or Cassava of John Bauhin.

2. **JATROPHA foliis quinquelobatis, lobis acuminatis, acutè dentatis lævibus, caule fruticoso.** *Jatropha* with Leaves composed of 5 smooth Lobes ending in Points, sharply indented on their Edges, and a shrubby Stalk. *Jussievia frutescens, non spinosa, foliis glabris & minus laciniatis.* Houst. Mss. Shrubby *Jussievia* without Spines, and smooth Leaves less divided.

3. **JATROPHA aculeata, foliis quinquelobatis acutè incisis, caule herbaceo.** Prickly *Jatropha* with Leaves having 5 Lobes sharply cut on their Edges, and an herbaceous Stalk. *Jussievia herbacea, spinosissima, urens, foliis digitatis & laciniatis.* Houst. Mss. The most prickly stinging and herbaceous *Jussievia*, with fingered Leaves which are jagged.

4. **JATROPHA aculeata, foliis trilobis, caule herbaceo.** Lin. Sp. Pl. 1007. Prickly *Jatropha* with Leaves having 3 Lobes, and an herbaceous Stalk. *Jussievia herbacea spinosissima, urens, foliis trilobatis minimè incisis.* Houst. Mss. Prickly stinging herbaceous *Jussievia*, with Leaves having 3 Lobes very slightly indented.

5. **JATROPHA foliis palmatis dentatis aculeatis.** Hort. Cliff. 445. *Jatropha* with Hand-shaped, indented, prickly Leaves. Manibot spinosissima, folio vitigineo. Plum. Cat. 20. The most prickly Cassava with a Vine Leaf.

6. **JATROPHA foliis lobatis dentatis acuminatis, urentibus, caule arboreo.** *Jatropha* with lobated Leaves indented, acute, pointed, and stinging, and a Tree-like Stalk. *Jussievia arborea, minus spinosa, floribus albis umbellatis, foliis aconiti urentibus.* Houst. Mss. Tree *Jussievia* which is less prickly, with white Flowers growing in Umbels, and stinging Leaves like those of Wolfsbane.

7. **JATROPHA foliis multipartitis lævibus, stipulis setaceis multifidis.** Hort. Cliff. 445. *Jatropha* with smooth Leaves divided into many Parts, and bristly Stipulæ with many Points. *Ricinoides arbor Americana, folio multifido.* 656. Tree American Bastard Ricinus with a many pointed Leaf, commonly called French Physick Nut in America.

8. **JATROPHA foliis cordatis angulatis.** Hort. Cliff. 445. *Jatropha* with angular Heart-shaped Leaves. *Ricinoides Americana gossypii folio.* Tourn. Inst. 656. American Bastard Ricinus with a Cotton Leaf, commonly called Physick Nut in America.

9. **JATROPHA foliis quinquepartitis, lobis ovatis integris, setis glandulosis ramosis.** Flor. Leyd. Prod. 202. *Jatropha* with Leaves divided into 5 Parts, the Lobes oval and entire, and branching Bristles arising from the Glands. *Ricinoides Americana staphysagria folio.* Tourn. Inst. 656. American Bastard Ricinus, with a Stavesacre Leaf, commonly called Belly-ach Weed in America.

The 1st Sort here mentioned, is the common Cassava or Cassava, cultivated for Food in the warm Parts of America, where, after the Juice is expressed out of the Root (which has a poisonous Quality) it is ground into a Kind of Flour, and made up in Cakes or Puddings, and is esteemed a wholesome Food.

This rises with a shrubby Stalk 6 or 7 Feet high, garnished with smooth Leaves, standing on long Foot Stalks alternately; they are composed of 7 Lobes, joined at their Base in one Center, where they are narrow, but increase in their Breadth till within an Inch and a Half of the Top, where they diminish to an acute Point; the 3 Middle Lobes are about 6 Inches long, and 2 broad in their broadest Part; the 2 next are about an Inch shorter, and the two Outside Lobes are not more than 3 Inches long; the middle Lobes are sinuated on each Side near the Top, but the two outer are entire. The Flowers are produced in Umbels at the Top of the Stalks, these are some male and others female; they are composed of 5 roundish Petals which spread open; the male Flowers have their 10 Stamina joined together in a Column, and the female Flowers have a roundish Germen with 3 Furrows in the Center, supporting 3 Styles; 2 are separated at a Distance, and the third arises between them, but is not so long; they are crowned by single Stigmas. The Germen afterward turns to a roundish Capsule with 3 Lobes, each having a distinct Cell, containing 1 Seed.

The 2d Sort was discovered by Dr. Houstoun at the Havanna, from whence he sent the Seeds. This rises with an upright Stalk, 10 or 12 Feet high, which is first green and herbaceous, but afterward becomes ligneous

neous, sending out a few Branches at the Top, garnished with smooth Leaves composed of 5 oval Lobes, which end in acute Points; the Edges are also indented in several irregular Points, which are acute. The Flowers are produced in an Umbel at the Extremity of the Stalks, they are of an herbaceous white Colour, and male and female in the same Umbel, as the other Sort; the Capsule is smooth and has 3 Cells, each including a single Seed.

The 3d Sort was discovered by the late Dr. *Houfoun*, growing naturally in the sandy Grounds about the Town of *La Vera Cruz*, from whence he sent the Seeds, which succeeded in the *Chelsea* Garden. This hath a very thick fleshy Root, in Shape like the white *Spanish* Radish; the Stalk rises from 1 to 2 Feet high, it is taper, herbaceous, and branching, and closely armed on every Side, with long white Spines, not very stiff, but pungent and stinging; the Leaves are divided into 5 Lobes, the Middle being the longest; the others are shortened, the 2 next being about an Inch shorter, but the 2 outer not more than half the Length of the Middle; these are deeply jagged on both Sides, and waved on their Edges; all the Veins of the Leaves are closely armed with stinging Spines, so that it is dangerous handling them; for all the intermediate Parts of the Leaves have small stinging Spines like those of the Nettle, but they do not appear so visible. At the End of the Branches, the Flowers are produced in Umbels; they are white, and have Empalements closely armed with the same Spines as the Stalks and Leaves: There are male and female Flowers in the same Umbel, the female Flowers are succeeded by tricapsular Vessels, containing 3 Seeds.

The 4th Sort rises with an herbaceous Stalk about a Foot high, dividing into 2 or 3 Branches, garnished with Leaves standing alternate on long Foot Stalks; they are composed of 3 oblong Lobes slightly sinuated on their Edges, ending in acute Points; the whole Plant is closely armed with long, bristly, stinging Spines. The Flowers grow in an Umbel at the End of the Branches; they are small, of a dirty white Colour, and are male and female in the same Umbel: The female Flowers are succeeded by oval Capsules with 3 Lobes, covered with the same Spines as the Plant; these have 3 Cells, each containing a single Seed. This Plant is annual.

The 5th Sort was found growing naturally at *Carthagena* in *New Spain*, by the late Mr. *Robert Millar*, who sent the Seeds to *England*, which succeeded in several curious Gardens. This hath a thick, swelling, fleshy Root, from which arises an herbaceous Stalk as big as a Man's Thumb, 4 or 5 Feet high, and divided into several Branches; these are very closely armed with long brown Spines; the Foot Stalks of the Leaves are 6 or 7 Inches long, armed with Spines, but not so closely, nor are the Spines so long as those on the Stalk and Branches; the Leaves are deeply cut into 5 Lobes, jagged deeply on their Sides, and the Nerves are armed with stinging Spines; the Flowers are produced in Umbels at the Top of the Branches, standing on long naked Foot Stalks; they are of a pure white Colour, and are male and female in the same Umbel: The male Flowers appear first, which are composed of 5 Petals, forming a short Tube at Bottom, and the Stamina arise

the Length of the Tube, joined in a Column: The Petals spread open flat above, and the Stamina fills the Mouth of the Tube, shutting it up: The female Flowers are smaller, but of the same Shape, having no Stamina, but an oval 3 cornered Germen, which afterward becomes a Capsule with 3 Lobes, each having a distinct Cell, with 1 Seed inclosed.

The 6th Sort was discovered at *La Vera Cruz*, where it is frequently permitted to grow about the Town by Way of Ornament; this rises with a strong brittle ligneous Stalk, 10 or 12 Feet high, covered with a gray Bark; and divides into many Branches, garnished with Leaves, divided into Parts like those of the common Wolfsbane, but armed with small stinging Spines like those of the Nettle; at the End of the Branches come out the Flower Stalks, which are 5 or 6 Inches long, sustaining an Umbel of white Flowers. The male Flowers are of 1 Petal, having a pretty long Tube, divided at the Top into 5 Segments. The female Flowers expand in Form of a Rose, having the Germen in the Center, which afterward becomes a globular prickly Fruit with 3 Lobes, opening in 3 Cells, each containing a single Seed.

The 7th Sort is now very common in most of the Islands in the *West-Indies*, but was introduced from the Continent, first into the *French* Islands, and from thence it was brought into the *British* Islands, where it is titled *French* Physick Nut, to distinguish it from the following Sort, which is called *Physick Nut*, from its purging Quality.

This rises with a soft thick Stem 8 or 10 Feet high, dividing into several Branches, covered with a grayish Bark. The Leaves come out on every Side the Branches, on strong Foot Stalks, 7 or 8 Inches long; they are divided into 9 or 10 Lobes in Form of a Hand, joined at their Base; these are 7 Inches long, and about 2 broad, with many jagged Points on their Borders standing opposite. The upper Sides of the Leaves are of a lucid green, but their under Side gray, and a little cottony. The Flowers come out upon long Foot Stalks from the End of the Branches, formed into an Umbel, in which are male and female Flowers, as in the other Species; these Umbels are large, and the Flowers being of a bright Scarlet, make a fine Appearance, and the Leaves being very remarkable for their Beauty, has occasioned the Plant being cultivated for Ornament in most of the Islands of the *West-Indies*.

The 8th Sort grows naturally in all the Islands of the *West-Indies*; this rises with a strong Stalk, 12 or 14 Feet high, which divides into several Branches; garnished with angular Heart-shaped Leaves, which end in acute Points. The Flowers come out in Umbels at the End of the Branches; they are male and female, of an herbaceous Colour, so make but little Appearance; the female Flowers are succeeded by oblong oval Capsules with 3 Cells, each containing 1 oblong black Seed.

The Seeds of the 2 last Sorts have been used as a Purgative by the Inhabitants of the *West-Indies*, but they operate so violently, that they are seldom used; 3 or 4 of these Nuts have worked upward and downward near 40 Times, on a Person who was ignorant of their Effects; but is affirmed that this purgative Quality is contained in a thin Film, situated in the Center

of the Nut, which, if taken out, the Nuts are harmless, and may be eaten with Safety. The Leaves of the last Sort are used in Baths and Fomentations.

The 9th Sort grows naturally in all the Islands of the *West-Indies*, where it is sometimes called wild *Cassada*, or *Cassava*, and at others Belly-ach Weed; the Leaves of this Plant being accounted a good Remedy for the dry Belly-ach. This Plant rises with a soft herbaceous Stalk, 3 or 4 Feet high, covered with a purple Bark, and at the Joints has branching bristly Hairs, rising in small Bunches, not only upon the principal Stalk, but also on the Branches, and the Foot Stalks of the Leaves. The Stalk divides upward into 2 or 3 Branches; these are garnished with Leaves standing on very long Foot Stalks; they are divided into 5 Lobes, which are oval, entire, and end in acute Points. The Flowers are produced at the End of the Branches, on slender naked Foot Stalks, in small Umbels; they are of a dark purple Colour, having male and female Flowers in the same Umbel; the female Flowers are succeeded by oblong tricapular Vessels, smooth, and covered with a dark Skin, when ripe; in each of the Cells is lodged 1 Seed.

All these Plants are Natives of the warm Parts of *America*, so are too tender to thrive in the open Air in *England*. The first Sort is cultivated in the *West-Indies* for Food, where it is propagated by cutting the Stalks into Lengths of 7 or 8 Inches, which, when planted, put out Roots; the Method of doing this having been mentioned in various Books, I shall not repeat it here.

The other Sorts are easily propagated by Seeds, which should be sown in a good hot Bed in the Spring, and when the Plants are fit to remove, they should be each transplanted into a small Pot filled with light Earth, and then plunged into a fresh hot Bed of Tanners Bark, carefully shading them till they have taken fresh Root, after which they must be treated as other tender Plants from hot Countries, admitting fresh Air to them daily, in Proportion to the Warmth of the Season; but as many of the Sorts have succulent Stalks, some of which have a milky Juice, they should have little Water given them, for they are soon destroyed by Wet.

The 4th Sort is an annual Plant, so if the Seeds are sown early in the Spring, and the Plants are brought forward, they will perfect their Seeds the same Year; but the other Sorts are perennial, so do not flower till the second or third Year, therefore the Plants should be plunged into the Tan Bed in the Stove, where they should constantly remain, giving them a large Share of Air in warm Weather, but in Winter they must be tenderly treated, and then must have very little Water. With this Management the Plants will continue several Years, and produce their Flowers, and frequently perfect their Seeds in *England*.

IBERIS. *Dillen*. *Nov. Gen.* 6. *Lin. Gen. Pl.* 721. *Tblaspidium*. *Tourn. Inst. R. H.* 214. *Tab.* 101. *Sciatica* Crefs.

The Characters are,

The Flower hath an Empalement of 4 oval Leaves, which spread open, are hollowed and fall away. It hath 4 unequal Petals, which are oval, obtuse, and spread open; they have oblong erect Tails, the 2 outer Petals are longer than the other. It hath 6 Awl-shaped erect Stamina,

the 2 on the Sides being shorter than the rest, terminated by roundish Summits. In the Center of the Tube is situated a round compressed Germen, supporting a short single Style, crowned by an obtuse Stigma. The Germen afterward becomes a roundish compressed Vessel, having 2 Cells, each containing 1 oval Seed.

The Species are,

1. *IBERIS frutescens, foliis cuneiformibus obtusis integerrimis*. *Lin. Hort. Cliff.* 330. Shrubby *Sciatica* Crefs with entire, Wedge-shaped, blunt Leaves, commonly called, The Tree Candy Tuft. *Tblaspidium fruticosum, leucii folio, semperflorens*. *Tourn. Inst.* 214. Shrubby *Tblaspidium* with a Gilliflower Leaf, always flowering.

2. *IBERIS frutescens foliis linearibus acutis integerrimis*. *Lin. Hort. Cliff.* 330. Shrubby *Sciatica* Crefs with narrow pointed whole Leaves, commonly called, Perennial Candy Tuft. *Tblaspi montanum, sempervirens*. *C. B. P.* 106. Ever-green Mountain Candy Tuft.

3. *IBERIS foliis lanceolatis acuminatis, inferioribus serratis, superioribus integerrimis*. *Lin. Hort. Cliff.* 330. *Sciatica* Crefs with Spear-shaped pointed Leaves, the under ones being sawed, but the upper entire, commonly called, Candy Tuft. *Tblaspi Creticum quibusdam, flore rubente & albo*. *J. B.* 2. 924. True Cretan Treacle Mustard with a red and white Flower.

4. *IBERIS foliis linearibus supernè dilatatis serratis*. *Flor. Leyd.* 330. *Sciatica* Crefs with narrow Leaves dilated at their Top, and sawed. *Tblaspi umbellatum Creticum, flore albo odoro, minus*. *C. B. P.* 106. Small umbellated Treacle Mustard of *Crete* with a white sweet Flower.

5. *IBERIS foliis sinuatis, caule nudo simplici*. *Lin. Hort. Cliff.* 328. *Sciatica* Crefs with sinuated Leaves, and a single naked Stalk. *Nasturtium petraeum*. *Tab. Ic.* 451. Rock Crefs.

6. *IBERIS foliis lanceolatis acutis subdentatis, floribus racemosis*. *Lin. Hort. Ups.* 184. *Sciatica* Crefs with acute, Spear-shaped, indented Leaves, and Flowers growing in Bunches. *Tblaspi arvense umbellatum amarum*. *J. B.* 2. 925. Bitter umbellated Field Treacle Mustard.

7. *IBERIS foliis subrotundis crenatis*. *Reyen. Lin. Sp. Pl.* 649. *Iberis* with roundish crenated Leaves. *Tblaspi Alpinum, folio rotundiore carnosio, flore purpurascens*. *Tourn. Inst.* 212. Alpine Treacle Mustard with a rounder fleshy Leaf, and a purplish Flower.

8. *IBERIS frutescens, foliis linearibus acutis, corymbis hemisphaericis*. Shrubby *Sciatica* Crefs with narrow acute Leaves, and hemispherical Bunches of Flowers. *Tblaspi Lusitanicum umbellatum, gramineo folio, purpurascens flore*. *Tourn. Inst. R. H.* 213. Portugal umbellated Treacle Mustard with a Grass Leaf, and a purplish Flower.

The 1st Sort here mentioned is a low shrubby Plant, which seldom rises above a Foot and Half high, having many slender Branches, which spread on every Side, and fall to the Ground, if not supported. These Branches are well furnished with Leaves toward their Extremity, which continue green all the Year; and in Autumn the Flowers are produced at the End of the Shoots, which are white, and grow in an Umbel. These Flowers continue long in Beauty, and are succeeded by others, so that the Plants are rarely destitute of Flowers for near 8 Months, from the End of *October* to the Beginning

ginning of *June*, which renders the Plant valuable.

This Plant is somewhat tender, therefore is generally preserved in Green-houses in Winter, where, being placed among other low Plants toward the Front of the House, it makes an agreeable Variety, as it continues flowering all the Winter. But although it is commonly so treated, yet in moderate Winters this Plant will live in the open Air, if it be planted in a warm Situation, and on a dry Soil; and if, in very hard Frost, they are covered either with Mats, Reeds, Straw, or Peas Haulm, they may be preserved very well, and these Plants which grow in the full Ground, will thrive better, and produce a greater Number of Flowers, than those kept in Pots; but the Soil in which these are planted, should not be over rich, nor too wet, for in either of these they will grow too vigorous in Summer, so will be in greater Danger of suffering by the Frost in Winter; but when they grow on a gravelly Soil, or among Lime Rubbish, their Shoots will be short, strong, and not so replete with Moisture, so will better resist the Cold.

This Plant very rarely produces Seeds in *England*, therefore is only propagated by Cuttings, which if planted during any of the Summer Months, and shaded from the Sun, and duly watered, will be rooted in 2 Months, and may afterward be either planted in Pots, or into the Borders where they are designed to stand.

There is a Variety of this with variegated Leaves, preserved in some of the Gardens where Persons delight in these striped leaved Plants. This is not so hardy as the plain Sort, therefore must be treated more tenderly in Winter; this is also increased by Cuttings as the other.

The 2d Sort is a Plant of humbler Growth than the first; this seldom rises more than 6 Inches high, nor do the Branches grow woody, but are rather herbaceous; the Leaves of this Plant continue green through the Year, and the Flowers are of as long Duration as those of the first Sort, which renders it valuable. This rarely produces Seeds in *England*, but is propagated by Stips, which, in Summer, easily take Root, and the Plants may be treated as the first Sort.

The 3d Sort is a low annual Plant, the Seeds of which were formerly sown to make Edgings for Borders in the Pleasure Garden, for which Purpose all the low annual Flowers are very improper, because they do not answer the Intent, which is to prevent the Earth of the Borders falling into the Walks, which these Plants never can do; and although they make a pretty Appearance during their Continuation in flower, which is seldom more than a Fortnight or three Weeks, yet after their Flowers are past, they become very unsightly; therefore all these Sorts of Flowers should be sown in small Patches in the Borders of the Flower Garden, where, if they are properly mixed with other Flowers, they will have a very good Effect, and by sowing them at 3 or 4 different Seasons, there may be a Succession of them continued in flower till Autumn.

There are 2 different Varieties of this 3d Sort, one with red, and the other hath white Flowers, but the white is not common in the Gardens, but the Seeds of the 6th Sort are generally sold for it, and is seldom distinguished but by those who are skilled in Botany; this Plant seldom rises more than 5 or 6 Inches high,

and if they have Room will branch out on every Side, but when they are left too close, they draw each other up, and are weak; as these do not bear transplanting well, so the Seeds should be sown thin in Patches, and when the Plants are grown pretty strong, they should be thinned, leaving but 6 or 8 in each Patch to flower, and by thus treating them, they will put out Side Branches, and flower much stronger, and continue longer in Beauty than when they are left closer together; these Plants will require no other Culture but to keep them clean from Weeds.

The 4th Sort seldom grows so large as the third, and the Flowers are much smaller, but have an agreeable Odour. It grows naturally in *Helvetia*, and is preserved in Botanick Gardens for Variety. It is annual, and requires the same Treatment as the third.

The 5th Sort grows on sandy and rocky Places in several Parts of *England*, so is rarely admitted into Gardens. The Leaves of this are small, and cut to the Mid-rib into many Jags; these spread on the Ground, and between them arises a naked Foot Stalk, 2 or 3 Inches long, sustaining small Umbels of white Flowers. This is an annual Plant, whose Seeds should remain, and require no other Care but to keep them clean from Weeds.

The 6th Sort is very like the 3d, but differs in the Shape of the Leaves. The Flowers are white, so may be sown to make a Variety with the red. It requires the same Treatment.

The 7th Sort grows naturally on the *Alps*, from whence it was sent me; this is a perennial Plant, which roots pretty deep in the Ground. The lower Leaves which rise from the Root, are round, fleshy, and cre-nated on their Edges. The Stalk rises 4 or 5 Inches high, and is garnished with small oblong Leaves, which half embrace the Stalks with their Base. The Flowers terminate the Stalk in a round compact Umbel; they are of a purple Colour, and appear in *June*, but are seldom succeeded by Seeds in *England*.

It is propagated by Seeds, which should be sown on a shady Border in Autumn, and when the Plants are strong enough to remove, they should be transplanted on a shady Border, where they are designed to remain, and will require no other Care but to keep them clean from Weeds.

The 8th Sort grows naturally in *Spain* and *Portugal*; this hath a great Resemblance of the 2d, but the Stalks do not spread so much; they grow erect, about 7 or 8 Inches high, are ligneous and perennial. The Leaves are very narrow, and seldom more than an Inch long, standing thinly on the Stalk, having no Foot Stalks. The Flowers grow in hemispherical Umbels on the Top of the Stalks, and are of a purple Colour. It flowers in *May* and *June*, but seldom produces good Seeds here.

This Sort may be propagated by Cuttings, which should be treated as the first Sort, and some of the Plants may be planted on a warm Border in a dry Soil, where they will endure the Cold of our ordinary Winters very well, but it will be proper to have 2 or 3 Plants in Pots, which may be sheltered under a Frame in Winter, to preserve the Kind, if, by severe Frost, those in the open Air should be destroyed.

IBISCUS. See Hibiscus.

ICACO. See Chrysobalanus.

JET D'EAU is a French Word, which signifies a Fountain that casts up Water to any considerable Height.

These Spouts of Water are some of the greatest Beauties of the Italian Gardens, and are certainly better adapted for Gardens in those warm Countries, than they are for our Climate, because, in the great Heats of Summer, the Sight of these Water Spouts is cooling and refreshing to the Imagination, and they certainly add a real Coolness to the Air; but in cold Countries they cool the Air too much, therefore should not be erected; or if they are, they should be placed at such Distances from the Habitation, that the Damp may no Ways affect it.

ILEX. Lin. Gen. Pl. 158. *Aquifolium*. Tourn. Inst. R. H. 600. Tab. 371. The Holly Tree; in French, *Houx*.

The Characters are,

They have male, female, and hermaphrodite Flowers on different Plants, and often on the same Tree. The male Flowers have a small permanent Empalement of 1 Leaf, indented in 4 Parts; they have but 1 Petal, cut into 4 Segments almost to the Bottom; they have 4 Awl-shaped Stamina, shorter than the Petal, and terminated by small Summits. The female Flowers have their Empalements and Petals the same as the male, but have no Stamina; in their Center is placed the roundish Germen, having 4 obtuse Stigmas sitting on it. The Germen becomes a roundish Berry with 4 Cells, each containing a single hard Seed.

The Species are,

1. *Ilex foliis oblongo-ovatis, undulatis, spinis acutis*. Holly Tree with oblong oval Leaves which are waved, and have acute Spines. *Ilex aculeata baccifera*. C. B. P. 425. Prickly Berry-bearing Ilex; and the *Aquifolium sive agrifolium vulgè*. J. B. 114. The common Holly.

2. *Ilex foliis ovatis, undulatis, marginibus aculeatis, paginis superne spinosis*. Holly with oval waved Leaves, whose Borders are armed with strong Thorns, and their upper Surface prickly. *Aquifolium echinata folii superficie*. Cornut. Canad. 180. Holly Tree whose upper Surface of the Leaves is prickly, commonly called Hedge-hog Holly.

3. *Ilex foliis ovato-lanceolatis serratis*. Hort. Cliff. 40. Holly with oval, Spear-shaped, sawed Leaves. *Aquifolium Caroliniense, foliis dentatis, baccis rubris*. Catefb. Carol. 1. p. 31. Carolina Holly with indented Leaves and red Berries, commonly called Daboon Holly.

There are several Varieties of the common Holly with variegated Leaves, propagated by the Nursery Gardeners for Sale, and some Years past were in very great Esteem, but at present are but little regarded, the old Taste of filling Gardens with thorn Ever-greens being pretty well abolished; however, in the Disposition of Clumps or other Plantations of ever-green Trees and Shrubs, a few of the most lively Colours may be admitted, which will have a good Effect in the Winter Season, if properly disposed. As the different Variations of the Leaves of Hollies, are by the Nursery Gardeners distinguished by different Titles, I shall mention the most beautiful of them, by the Names they are generally known.

Painted Lady Holly, British Holly, Bradley's best Hol-

ly, Phyllis, or Cream Holly, Milkmaid Holly, Pritchett's best Holly, Gold-edged Hedge-hog Holly, Cheyney's Holly, Glory of the West Holly, Broaderick's Holly, Partridge's Holly, Herefordshire white Holly, Blind's Cream Holly, Longstaff's Holly, Eales's Holly, Silver-edged Hedge-hog Holly.

All these Varieties are propagated, by budding or grafting them on Stocks of the common green Holly: There is also a Variety of the common Holly with smooth Leaves, but this is frequently found intermixed with the prickly leaved on the same Tree, and often on the same Branch, there are both Sorts of Leaves.

The common Holly grows naturally in Woods and Forests in many Parts of England, where it rises from 20 to 30 Feet high, and sometimes more, but their ordinary Height is not above 25 Feet: The Stem by Age becomes large, and is covered with a grayish smooth Bark; and those Trees which are not lopped or browsed by Cattle, are commonly furnished with Branches the greatest Part of their Length, so form a Sort of Cone; the Branches are garnished with oblong oval Leaves about 3 Inches long, and one and a Half broad, of a lucid green on their upper Surface, but pale on their under, having a strong Mid-rib. The Edges are indented and waved, with sharp Thorns terminating each of the Points, so that some of the Thorns are raised upward and others are bent downward, and being very stiff, renders them troublesome to handle. The Leaves are placed alternate on every Side of the Branches, and from the Base of their Foot Stalks come out the Flowers in Clusters, standing on very short Foot Stalks; each of these sustain 5 or 6 or more Flowers. In some Plants I have observed the Flowers were wholly male, and produced no Berries; in others I have observed female and hermaphrodite Flowers, but upon some large old Trees growing in Windsor Forest, I have observed all three upon the same Trees. The Flowers are of a dirty white, and appear in May; these are succeeded by roundish Berries, which turn to a beautiful red about Michaelmas, but continue on the Trees if they are not destroyed, till after Christmas, before they fall away.

The 2d Sort grows naturally in Canada, from whence it was brought to Europe. The Leaves of this Sort are not so long as those of the common Holly, and their Edges are armed with stronger Thorns standing closer together; the upper Surface of the Leaves is set very close with short Prickles, from whence the Gardeners have given it the Title of Hedge-hog Holly. This Sort is usually propagated in the Nurseries, by budding or grafting it upon the common Holly, but I have raised it from the Berries, and found the Plants to be the same as those from whence the Seeds were taken, so make no Doubt of its being a distinct Species.

There are 2 Varieties of this with variegated Leaves, 1 of which is yellow, and the other white. There is also a Variety of the common Holly with yellow Berries, which is also accidental, and is generally found on those Plants which have variegated Leaves, and but seldom on plain Hollies.

The common Holly is a very beautiful Tree in Winter, therefore deserves a Place in all Plantations of ever-green Trees and Shrubs, where its shining Leaves and red Berries make a fine Variety; and if a few of the best varie-

varie-

variegated Kinds are properly intermixed, they will enliven the Scene. The Holly was also formerly planted for Hedges, and is a very proper Plant for that Purpose, but then it should not be clipped with Shears, because when the Leaves are cut through their Middle, they are rendered unfightly, so they should be cut with a Knife close to the Leaf; and although in this Method they are not shorn so even as with Shears, yet they will have a much better Appearance, and may be made as close and secure as by the other Method generally practised.

The Holly is propagated by Seeds, which never come up the first Year, but lie in the Ground as the Haws do; therefore the Berries should be buried in the Ground one Year, and then taken up and sown upon a Bed exposed only to a Morning Sun; the following Spring the Plants will appear, which must be kept clean from Weeds; and if the Spring should prove dry, it will be of great Service to the Plants, if they are watered once a Week; but they must not have it oftener, nor in too great Quantity, for too much Moisture is very injurious to these Plants when young.

In this Seed Bed the Plants may remain 2 Years, and then should be transplanted in the Autumn, into Beds at about 6 Inches asunder, where they may stand 2 Years longer; during which Time they must be constantly kept clean from Weeds, and if the Plants have thriven well, they will be strong enough to transplant, where they are designed to remain; for when they are transplanted at that Age, there will be less Danger of their failing, and they will grow to a larger Size, than those which are removed when they are much larger; but if the Ground is not ready to receive them at that Time, they should be transplanted into a Nursery in Rows at 2 Feet Distance, and 1 Foot asunder in the Rows, in which Place the Plants may remain 2 Years longer; and if they are designed to be grafted or budded with any of the variegated Kinds, that should be performed after the Plants have grown one Year in this Nursery; but the Plants so budded or grafted, should continue 2 Years after in the Nursery, that they may make good Shoots before they are removed; though the plain ones should not stand longer than 2 Years in the Nursery, because when they are older they do not transplant so well. The best Time for removing Hollies is in the Autumn, especially in dry Land, but where the Soil is cold or moist, they may be transplanted with great Safety in the Spring; if the Plants are not too old, or have stood long unremoved, for if they have it is great Odds of their dying when removed.

The Daboon Holly grows naturally in Carolina, from whence the Seeds were sent by the late Mr. Mark Catesby, who found the Trees growing on a Swamp at a Distance from Charles Town, but it hath since been discovered in some other Countries in North America. This rises with an upright branching Stem to the Height of 18 or 20 Feet; the Bark of the old Stems is of a brown Colour, but that of the Branches or younger Stalks is green and smooth, garnished with Spear-shaped Leaves, more than 4 Inches long, and 1 and a Quarter broad in the broadest Part, of a light green and thick Consistence; the upper Part of the Leaves are sawed on their Edges, each Serrature ending in a small sharp Spine; they stand alternately on every Side the Branches, on very short

Foot Stalks. The Flowers come out in thick Clusters from the Side of the Stalks, they are white, and shaped like those of the common Holly, but smaller; these are succeeded by small roundish red Berries in its native Country, which make a fine Appearance in Winter, but they have not as yet produced Fruit in England, so far as I can learn.

Dr. Linnaeus supposes this Plant and the ever-green Cassine to be the same, but they are undoubtedly distinct Plants: He may probably have been led into this Mistake, by receiving Seeds of both Sorts mixed together from America, which I have more than once done; but whoever sees the 2 Plants growing, cannot doubt of their being different.

This Sort is tender while young, so requires Protection in the Winter till the Plants are grown strong and woody, when they may be planted in the full Ground in a warm Situation, where they will endure the Cold of our ordinary Winters pretty well; but in severe Frost they should be protected, otherwise the Cold will destroy them.

This is propagated from Seeds, as the common Sort; the Seeds of it will lie as long in the Ground, so the Berries should be buried in the Ground a Year, and then taken up and sown in Pots filled with light Earth, and placed under a Frame in Winter; in the Spring the Pots should be plunged into a hot Bed, which will bring up the Plants; these must be preserved in Pots while young, and sheltered in Winter under a common Frame till they have obtained Strength, when they may be turned out of the Pots and planted in the full Ground, in a warm Situation.

From the Bark of the common Holly is made the Bird Lime, and the Wood is made into Hones for setting Razors. The Wood is very white, and takes a fine Polish, so is very proper for several Kinds of Furniture. I have seen a Floor of a Room laid in Compartments with Holly and Mahogany, which had a very pretty Effect.

IMPATIENS. Rivin. Ord. 4. Lin. Gen. Pl. 899. Balsamina. Tourn. Inst. R. H. 418. Tab. 235. Female Balsamine; in French, Balsaminé.

The Characters are,

The Flower has a 2 leaved small Emplacement, coloured and placed on the Side of the Petals. It hath 5 Petals which are unequal, and shaped like a Lip Flower; the Petals are roundish, the upper is erect, slightly cut at the Point into 3 Parts, where it is sharp pointed, forming the upper Lip; the 2 lower Petals are broad, obtuse, irregular, and reflexed, these constitute the lower Lip; the intermediate Pair are alike, and are placed opposite, joining at their Base. It hath a Nectarium in the Bottom of the Flower, shaped like a Hood or Cowl, which is oblique to the Mouth rising on the Outside, whose Base ends in a Tail or Spur. It hath 5 short Stamina narrow toward their Base and incurved, terminated by Summits which join at the Top round the Stamina, but divided at their Base. In the Bottom is situated an oval sharp pointed Germen, having no Style, but a single Stigma shorter than the Summits. The Germen becomes a Capsule with 1 Cell, opening with an Elasticity in 5 Valves which twist spirally, and contain several roundish Seeds fixed to a Column.

The Species are,

1. IMPATIENS pedunculis multifloris solitariis, foliis ovatis

ovatis, geniculis caulinis tumentibus. *Flor. Suec.* 722. *Impatiens* with Foot Stalks sustaining many single Flowers, oval Leaves, and Stalks having swelling Joints. *Balsamina lutea, sive, Noli me tangere. C. B. P.* 306. Yellow Balsamine, or, Touch me not.

2. *IMPATIENS pedunculis unifloris aggregatis, foliis lanceolatis, nectariis flore brevioribus. Hort. Ups.* 276. *Impatiens* with Foot Stalks sustaining single Flowers, which arise in Clusters, Spear-shaped Leaves, and Nectaria shorter than the Flower. *Balsamina fœmina. C. B. P.* 306. The female Balsamine.

3. *IMPATIENS pedunculis trifloris solitariis, foliis angusto-lanceolatis. Flor. Zeyl.* 315. *Impatiens* with 3 Flowers on a Foot Stalk, and narrow Spear-shaped Leaves. *Balsamina erecta f. fœmina, Persica angustifolia Zeylanica. Herm. Par. Bat.* 105. Upright or female Balsamine of *Ceylon*, with a narrow Peach Leaf.

There are several other Species of this Genus, which grow naturally in *India*, that are Plants of little Beauty, so have not been introduced into the *English* Gardens; the Sorts here mentioned, are all I have yet seen growing here.

The 1st Sort grows naturally in several Parts of *Westmoreland* and *Yorkshire*, but is frequently introduced into Gardens by Way of Curiosity. It is an annual Plant, which rises about a Foot high, with an upright succulent Stalk whose Joints are swollen; it is garnished with oval smooth Leaves, which stand alternate on every Side the Stalk. The Flowers come out from the Wings of the Stalks, upon long slender Foot Stalks, which branch into several other smaller, each sustaining 1 yellow Flower, composed of 5 Petals, which in Front are shaped like the Lip or grinning Flowers, but at their Base have a long Tail like the Flowers of *Indian Cress*; these are succeeded by taper Pods, which, when ripe, burst open upon being touched, and twist spirally like a Screw, casting out the Seeds with great Elasticity. If the Seeds of this Plant are permitted to scatter, they generally succeed better than when sown; for unless they are sown in the Autumn soon after they are ripe, they very rarely grow. The Plants require no Care but to keep them clean from Weeds, and thin them where too close. It flowers in *June*, and the Seeds ripen about a Month or 5 Weeks after; this delights in a shady Situation and a moist Soil.

The 2d Sort is the female Balsamine, of which there are several Varieties; the common Sort has been long an Inhabitant in the *English* Gardens, of this there is the white, the red, and striped flowered, and likewise the single and double flowering. These Sorts are so hardy as to rise in the full Ground, and where the Seeds scatter, the Plants will come up the following Spring, but these do not come to flower so early as those raised upon a hot Bed; however, they generally are stronger Plants, and continue much longer in the Autumn in flower than the others, so are an Ornament to the Garden, when there is a greater Scarcity of Flowers.

This Sort rises a Foot and a Half high, dividing into many succulent Branches, garnished with long, Spear-shaped, sawed Leaves. The Flowers come out from the Joints of the Stalks, on slender Foot Stalks about an Inch long, each sustaining a single Flower; but there are 2, 3, or 4 of these Foot Stalks arising from the same

Joint. The Flowers are composed of 5 large unequal Petals, shaped like those of the former Sort; but larger, and spread open much wider; there are white, purple, and red of this Sort, as also single and double Flowers. If the Seeds of these are sown on a moderate hot Bed in the Spring, the Plants will flower in *June*, but those sown in the full Ground, will not flower before the Middle of *July*, and these will continue flowering till the Frost puts a Stop to them in the Autumn.

There are 2 other Varieties of this, if not distinct Species; one of them grows naturally in the *East*, and the other in the *West-Indies*; that which comes from the *East-Indies*, by the Title of Immortal Eagle Flower, is a most beautiful Plant; the Flowers are double the Size of those of the common Sort, and very double; they are scarlet and white variegated, and purple and white in others; and the Plants producing many Flowers, render them very valuable, and if the Seeds of these are carefully saved, the Kinds may always be preserved; but I have raised some Plants from foreign Seeds, whose Flowers were so very double as to lose their male Parts, so did not produce any Seeds.

The Seeds of these Plants should be sown on a moderate hot Bed in the Spring, and when the Plants are come up about an Inch high, they should be transplanted on another moderate hot Bed at about 4 Inches Distance, observing to shade them from the Sun till they have taken new Root; after which they should have a large Share of free Air admitted to them, at all Times when the Weather is favourable, to prevent their drawing up tall and weak: They will require to be often refreshed with Water, but it should not be given to them in too great Plenty, for as their Stems are very succulent, they are apt to rot with much Moisture. When the Plants are grown so large as to touch each other, they should be carefully taken up with Balls of Earth to their Roots, and each planted into a separate Pot filled with light rich Earth, and plunged into a very moderate hot Bed with a deep Frame, to admit the Plants to grow, shading them from the Sun until they have taken fresh Root; then they should have a large Share of Air admitted to them every Day, and by Degrees hardened, so as to bear the open Air, into which Part of the Plants may be removed in *July*, placing them in a warm sheltered Situation, where, if the Season proves favourable, they will flower and make a fine Appearance; but it will be proper to keep Part of the Plants either in a Glass Case or a deep Frame, in order to get good Seeds, because those in the open Air will not ripen their Seeds unless the Summer proves very warm; and the Plants in Shelter must have a good Share of free Air every Day, otherwise they will grow pale and sickly; nor should they have too much of the Sun in the Middle of the Day, in very hot Weather, for that occasions their Leaves hanging and their requiring Water, which is often very hurtful; therefore if the Glasses are shaded in the Middle of the Day for three or four Hours, the Plants will thrive better, and continue longer in Beauty than when they are exposed to the great Heat. Those who are curious to preserve these Plants in Perfection, pull off all the single and plain coloured Flowers from the Plants which they preserve for Seeds, leaving only those Flowers which are double and of good Colours; where this is carefully done

done, they may be continued without the least Degeneracy constantly.

The Sort which grows in the *West-Indies*, is there called Cockspur. This hath single Flowers as large as the last mentioned Sort, but I never saw any of them more than half double, and only with white and red Stripes: The Plants are apt to grow to a very large Size before they produce any Flowers, so that it is late in the Autumn before they begin to flower, and sometimes in bad Seasons they will scarce have any Flowers, and but rarely ripen their Seeds here, so that few Persons care to cultivate this Sort, especially if they can have the other.

The third Sort here mentioned grows naturally in *Ceylon*, and in many Parts of *India*; this hath very narrow Spear-shaped Leaves, sawed on their Edges; the Foot Stalks sustain each 3 Flowers, smaller than those of the common Sort, so are not worthy of a Place in Gardens, except for Variety. This is a tender Plant, and requires the same Treatment as the Immortal Eagle Flower.

IMPERATORIA. *Lin. Gen. Pl. 321. Tourn. Inst. R. H. 316. Tab. 168.* Masterwort; in *French, Imperatoire.*

The Characters are,

It hath an umbellated Flower; the principal Umbel is plain, and composed of many smaller; the principal Umbel has no Involucrum, but the small ones have, which are composed of many narrow Leaves, almost as long as the Umbel. The principal Umbel is uniform; the Flowers have 5 Heart-shaped Petals, equal and inflexed. They have 5 hairy Stamina, terminated by roundish Summits. The Germen is situated under the Petals, supporting 2 reflexed Styles, crowned by obtuse Stigmas. The Germen becomes a roundish compressed Fruit divided in 2 Parts, containing 2 oval bordered Seeds.

We have but one Species of this Genus, viz.

IMPERATORIA. *Hort. Cliff. 103.* Masterwort. This is the *Imperatoria major*. *C. B. P. 156.* Greater Masterwort, and the *Astrantia* of *Dodonæus*. *Pempt. 320.* Masterwort, or false Pellitory of *Spain*.

This Plant grows naturally on the *Austrian* and *Styrian Alps*, and upon other mountainous Places in *Italy*; the Root is as thick as a Man's Thumb, running obliquely in the Ground; it is fleshy, aromatick, and has a strong acrid Taste, biting the Tongue and Mouth like Pellitory of *Spain*; the Leaves arise immediately from the Root, they have Foot Stalks 7 or 8 Inches long, dividing into 3 very short ones at the Top, each sustaining a trilobate Leaf, indented on the Border; the Foot Stalks are deeply channelled, and when broken emit a rask Odour. The Flower Stalks rise about 2 Feet high, and divide into 2 or 3 Branches, each being terminated by a pretty large Umbel of white Flowers, whose Petals are split; these are succeeded by oval compressed Seeds, somewhat like those of Dill, but larger. It flowers in *June*, and the Seeds ripen in *August*.

This Plant is cultivated in Gardens to supply the Markets. It may be propagated either by Seeds, or parting the Roots; if you would propagate it by Seeds, they should be sown in Autumn soon after they are ripe, on a Bed or Border, in a shady Situation; observing not to sow the Seeds too thick, nor should they be covered too

deep. In the Spring the Plants will appear, when they should be carefully weeded; and if the Season should prove very dry, they should be now and then refreshed with Water, which will greatly promote their Growth. Toward the Beginning of *May*, if you find the Plants come up too close together, you should prepare a moist shady Border (and thin the Plants carefully, leaving them about 6 Inches asunder;) and plant those which you draw up, into the Border about the same Distance apart every Way, being careful to water them duly, if the Season should prove dry, until they have taken Root; after which Time, these Plants (as also those remaining in the Seed Beds) will require no other Culture but to keep them clear from Weeds; which may be easily effected, by hoeing the Ground between the Plants now and then in dry Weather, which will destroy the Weeds, and by stirring the Ground, be of great Service to the Plants. The following Autumn these Plants should be transplanted where they are to remain, which should be in a rich moist Soil, and shady Situation; where they will thrive much better than if too much exposed to the Sun, or in a dry Soil, for they delight in Shade and Moisture; so that where these are wanting, the Plants will require a constant Supply of Water in dry Weather, otherwise they will thrive but slowly. The Distance which these Plants should be placed, must not be less than 2 Feet every Way, for where they like their Situation, they will spread and increase much. When these Plants are rooted, they will require no other Culture, but to keep them clear from Weeds; and in the Spring before they shoot, the Ground should be every Year gently dug between the Plants; in doing which, great Care should be had, not to cut or bruise their Roots. These Plants, with this Management, will continue several Years, and produce Seeds in Plenty.

If you would propagate these Plants by Offsets, their Roots should be parted at *Michaelmas*, and planted in a shady Situation, at the same Distance as the seedling Plants, observing to water them until they have taken Root, after which Time they must be managed as the Seedlings.

The Roots of this Plant are used in Medicine, and are greatly recommended for their Virtue in contagious Distempers or the Bites of venomous Creatures; they are alexipharmick and sudorifick, by some they are recommended for Cholicks and Asthmas, for the Cramp, and all cold Diseases of the Nerves.

INARCHING is a Method of grafting, commonly called *grafting by Approach*. This Method of grafting is used, when the Stock you intend to graft on, and the Tree from which you would take the Graft, stand so near (or can be brought so near) that they may be joined together. The Method of performing it is as follows: Take the Branch you would inarch, and having fitted it to that Part of the Stock where you intend to join it, pare away the Rind and Wood on one Side about 3 Inches in Length. After the same Manner cut the Stock or Branch in the Place where the Graft is to be united, so that the Rind of both may join equally together, that the Sap may meet; then cut a little Tongue upwards in the Graft, and make a Notch in the Stock to admit it; so that when they are joined, the Tongue will prevent their slipping, and the Graft will more closely unite with

with the Stock. Having thus placed them exactly together, you must tie them with some Bafs, or other soft Tying; then cover the Place with grafting Clay, to prevent the Air from entering to dry the Wound, or the Wet from getting in to rot the Stock: You should also fix a Stake into the Ground to which that Part of the Stock, as also the Graft, should be fastened, to prevent the Wind from breaking them afunder, which is often the Cafe when this Precaution is not obferved.

In this Manner they are to remain about 4 Months, in which Time they will be fufficiently united, and the Graft may then be cut from the Mother Tree, obferving to flope it off clofe to the Stock; and if at this Time you cover the joined Parts with fresh grafting Clay, it will be of great Service to the Graft.

This Operation is always performed in April or May, that the Graft may unite with the Stock before the fucceeding Winter, and is commonly praftifed upon Oranges, Myrtles, Jafmines, Walnuts, Firs, Pines, and feveral other Trees, which will not fucceed by common grafting or budding. But although I have mentioned Orange Trees among the reft, yet I would by no Means advife this Practice where the Trees are defigned to grow large, which, in this Method, they rarely ever will do; and it is chiefly praftifed upon thofe Trees only as a Curiofity, to have a young Plant with Fruit upon it, in a Year or two from Seed, by inarching a bearing Branch into a young Stock, whereby it is effected, yet thefe Plants are feldom long lived.

INDIGO. See Anil.

INGA. Plum. Nov. Gen. 13. Tab. 19. *Mimosa*. Lin. Gen. Pl. 507.

This is the American Name of the Plant, for which we have no Englifh one.

The Characters are,

The Flower has a permanent Empalement of 1 Leaf, tubulous, and divided into 5 Parts at the Top. It hath 1 Petal, is Funnel-shaped, and cut into 5 Segments at the Brim, where it is fringed, out of which arife a great Number of Stamina, 3 Times the Length of the Tube, terminated by fmall roundifh Summits. At the Bottom of the Tube is fituated an oblong Germen, fupporting a long fender Style, crowned by a roundifh Stigma; the Germen afterward becometh a flefhy Pod, including feveral irregular Seeds.

The Species are,

1. *INGA foliis pinnatis, petiolo articulato marginato, leguminibus latis carnofis & undulatis.* Inga with winged Leaves, whose Foot Stalk is bordered and jointed, and broad, flefhy, waved Pods. Inga flore albo fimbriato, fructu dulci. Plum. Nov. Gen. 13. Inga with a white fringed Flower, and a fweet Fruit.

2. *INGA foliis pinnatis, petiolo articulato marginato leguminibus tenuiffimis lanuginofis.* Inga with winged Leaves, whose Foot Stalk is jointed and bordered; and very narrow woolly Pods.

The 1st Sort grows naturally on the North Side of the Ifland of Jamaica, and on the Spanifh Main. This rifes with a woody Stalk 15 or 16 Feet high, covered with a white Bark, fending out many crooked irregular Branches which hang to the Ground; thefe are garnifhed with winged Leaves, compofed of 3 or 4 Pair of oblong oval Lobes, placed oppofite on a Mid-rib, which has a Bor-

der or Wing on each Side between the Lobes; they are covered with a brownifh Down on their under Side, but are of a lucid green on their upper Side. The Flowers come out in Spikes toward the End of the Branches, each ftanding in a diftinct Empalement, which is tubulous, and divided into 5 Segments at the Top, having a great Number of very long purple Stamina, and are fucceeded by long flefhy Pods 3 Quarters of an Inch broad, filled with a fweet Pulp, in which the Seeds are lodged; this Pulp is frequently eaten by the Negroes.

The 2d Sort grows plentifully at La Vera Cruz, from whence the late Dr. Houftoun fent it to Europe. This feldom rifes more than 8 or 10 Feet high, the Branches are covered with a brown Down, as are the under Side of the Leaves; the Lobes are not fo obtufe as thofe of the other Sort. The Flowers come out from the Wings of the Branches in fmall Spikes; they are of a purplifh Colour within, but of an herbaceous Colour without, with long purple Stamina, and are fucceeded by long narrow downy Pods, containing feveral irregular Seeds.

Thefe Plants are preferved by thofe Perfons who are curious in collecting exotick Plants; they are propagated by Seeds, which fhould be fown early in the Spring, in Pots filled with light rich Earth, and plunged into a hot Bed of Tanners Bark. When the Plants are come up 2 Inches high, they fhould be carefully tranfplanted into feparate Pots filled with light rich Earth, and then plunged into the hot Bed again, being careful to fhade them from the Sun until they have taken new Root, after which Time they muft be gently watered; and in hot Weather the Glaffes of the hot Bed fhould be raifed every Day, to admit fresh Air to the Plants, to prevent their being drawn up too weak. At Michaelmas thefe Plants muft be removed into the Stove, and plunged into the Tan in the warmeft Part of the Bed. During the Winter Season they muft be kept very warm, and once in a Week or 10 Days refrefhed with Water, but it muft not be given to them in too large Quantities in cold Weather; in the Summer they will require to be oftener watered, and in hot Weather they fhould have a large Share of fresh Air, by opening the Glaffes of the Stove; but they muft not be removed out of the Stove, for they are too tender to endure the open Air of this Country, in the warmeft Part of the Year. When the Plants have filled the Pots with their Roots, they fhould be tranfplanted into larger, and their Roots fhould be then carefully trimmed. With this Management the Plants will thrive, and in a few Years produce Flowers, fo will add to the Variety amongft other tender exotick Plants in the Stove.

INOCULATING, or Budding. This is commonly praftifed upon all Sorts of Stone Fruit, in particular, fuch as Peaches, Nectarines, Cherries, Plums, &c. as alfo upon Oranges and Jafmines, and is preferable to any Sort of grafting for moft Sorts of Fruit. The Method of performing it is as follows: You muft be provided with a fsharp Penknife, having a flat Haft (the Ufe of which is to raife the Bark of the Stock, to admit the Bud), and fome found Bafs Mat, which fhould be foaked in Water to encrease its Strength, and make it more pliable; then having taken off the Cutting from the Trees you would propagate, you fhould choofe a fmooth Part of the Stock about 5 or 6 Inches above the Surface

face of the Ground, if designed for Dwarfs; but if for Standards, they should be budded 6 Feet above Ground; then with your Knife make an horizontal Cut cros the Rind of the Stock, and from the Middle of that Cut make a Slit downwards about two Inches in Length, so that it may be in the Form of a T; but you must be careful not to cut too deep, lest you wound the Stock: Then having cut off the Leaf from the Bud, leaving the Foot Stalk remaining, you should make a cros Cut about half an Inch below the Eye, and with your Knife slit off the Bud, with Part of the Wood to it, in Form of an Escutcheon: This done, you must with your Knife pull off that Part of the Wood which was taken with the Bud, observing whether the Eye of the Bud be left to it, or not, (for all those Buds which lose their Eyes in stripping, should be thrown away, being good for nothing;) then having gently raised the Bark of the Stock where the Cros Incision was made, with the flat Haft of your Penknife clear to the Wood, you should thrust the Bud therein, observing to place it smooth between the Rind and the Wood of the Stock, cutting off any Part of the Rind belonging to the Bud, which may be too long for the Slit made in the Stock; and so having exactly fitted the Bud to the Stock, you must tie them closely round with Bals Mat, beginning at the under Part of the Slit, and so proceed to the Top, taking Care that you do not bind round the Eye of the Bud, which should be left open.

When your Buds have been inoculated 3 Weeks or a Month, you will see which of them have taken; those of them which appear shriveled and black, being dead, but those which remain fresh and plump, you may depend are joined; and at this Time you should loosen the Bandage, which, if not done in Time, will pinch the Stock, and greatly injure, if not destroy, the Bud.

The *March* following you must cut off the Stock about 3 Inches above the Bud, sloping it that the Wet may pass off, and not enter the Stock; to this Part of the Stock left above the Bud, it is very proper to fasten the Shoot which proceeds from the Bud, and would be in Danger of being blown out, if not prevented; but this must continue on no longer than one Year, after which it must be cut off close above the Bud, that the Stock may be covered thereby.

The Time for Inoculating is, from the Middle of *June*, until the Middle of *August*, according to the Forwardness of the Season, and the particular Sorts of Trees, which may be easily known, by trying the Buds whether they will come off well from the Wood. But the most general Rule is, when you observe the Buds formed at the Extremity of the same Year's Shoots, which is a Sign of their having finished their Spring Growth.

The first Sort commonly inoculated is the Apricot, and the last the Orange Tree, which should never be done until the Middle of *August*; and in doing this Work, you should always make Choice of cloudy Weather, for if it be done in the Middle of the Day, in very hot Weather, the Shoots will perspire so fast, as to leave the Buds destitute of Moisture; nor should you take off the Cuttings from the Trees long before they are used; but if you are obliged to fetch your Cuttings from some Distance, as it often happens, you should then be provided with a Tin Instrument, having a Soc-

ket about 10 Inches long, and a Cover to the Top, which must have 5 or 6 Holes; in this Socket you should put as much Water as will fill it about 2 or 3 Inches high, and place your Cuttings therein in an upright Position, so that that Part which was cut from the Tree may be set in the Water, and so fasten down the Cover to keep out the Air, and the Holes in the Cover will be sufficient to let the Perspiration of these Branches pass off, which, if pent in, would be very hurtful to them; and you must be careful to carry it upright, that the Water may not reach to the Buds, for it is a very wrong Practice in those who throw their Cuttings all over in Water, which so saturates the Buds with Moisture, that they have no attractive Force left to imbibe the Sap of the Stock, whereby they very often miscarry.

But before I leave this Head, I beg Leave to observe, that though it is the ordinary Practice to divest the Bud of that Part of the Wood which was taken from the Shoot with it; yet, in many Sorts of tender Trees, it is best to preserve a little Wood to the Bud, without which they often miscarry. The not observing this, has occasioned some People to imagine, that some Sorts of Trees are not to be propagated by Inoculation, whereas, if they had performed it in this Method, they might have succeeded, as I have several Times experienced.

INTYBUS. See Cichorium.

INULA. Lin. Gen. Pl. 860. *Equla Cæsalp. Helenium. Raii. Meth. 33. Aster. Tourn. Inst. R. H. 481. Tab. 274. Elecampane.*

The Characters are,

It hath a radiated compound Flower, with an imbricated Empalement, composed of loose, spreading, small Leaves, the outer being the broadest. The Disk, or Middle of the Flower is composed of hermaphrodite Flowers, and the Border, or Ray of the female half Florets, stretched out like a Tongue. The hermaphrodite Flowers are Funnel-shaped, erect, and cut into 5 Parts at the Top; these have 5 short slender Stamina, terminated by cylindrical Summits, which coalesce at the Top; they have 1 long Germen, crowned with Down, supporting a slender Style the Length of the Stamina, crowned by an upright bifid Stigma. The female Flowers have a narrow entire Tongue, no Stamina, but a long crowned Germen with a hairy Style, and an upright Stigma. The Germen in both Flowers becomes a single, narrow four-cornered Seed, crowned with a Down, sitting on a naked Receptacle.

The Species are,

1. *INULA foliis ovatis, rugosis, subtus tomentosis, calycum squamis ovatis. Amæn. Acad. 1. p. 410. Elecampane* with oval rough Leaves, woolly on their under Side, and the Scales of the Empalement oval. *Aster omnium maximus, Helenium dictus. Tourn. Inst. 483. The greatest Starwort, called Elecampane.*

2. *INULA foliis dentatis hirsutis, radicalibus ovatis, caulinis lanceolatis amplexicaulibus, caule paucifloro. Lin. Sp. Pl. 881. Inula* with hairy indented Leaves, those at the Bottom oval, but those on the Stalks Spear-shaped, and embracing the Stalks, which have but few Flowers. *Aster luteus radice odora. C. B. P. 266. Yellow Starwort* with a sweet Root.

3. *INULA foliis lanceolatis recurvis serrato-ciliatis, floribus solitariis, ramis angulatis. Amæn. Acad. 1. p. 410. Inula* with Spear-shaped recurved Leaves, which are

sawed, hairy Flowers growing singly, and angular Branches. *After montanus luteus, foliis glabro folio. C. B. P. 266.* Yellow Mountain Starwort with a smooth Willow Leaf.

4. *INULA foliis lanceolatis recurvis, subdentatis, scabris, floribus subsessilibus.* Lin. Sp. Pl. 883. *Inula* with Spear-shaped recurved Leaves, indented and rough, and Flowers growing in Clusters. *After Thuringiacus altissimus latifolius, montanus, flore luteo parvo. Haller. jen. 181.* Tallest broad leaved Mountain Starwort of Thuringia with a small yellow Flower.

5. *INULA foliis linearibus carnosissimis tricuspidatis.* Lin. Sp. Pl. 883. *Inula* with narrow fleshy Leaves ending in 3 Points. *After maritimum flavum Cithmum chrysanthemum dictus. Raii. Syn. Ed. 3. p. 174.* Yellow maritime Starwort, called Golden Samphire.

6. *INULA foliis lanceolatis pubescentibus integerrimis, caule unifloro.* Lin. Sp. Pl. 884. *Inula* with soft, hairy, Spear-shaped, entire Leaves, and 1 Flower on a Stalk. *After montanus luteo magno flore. C. B. P. 267.* Mountain Starwort with a large yellow Flower.

7. *INULA foliis oblongis, integris, hirsutis, caule piloso, corymbofo, floribus confertis.* Lin. Sp. Pl. 881. *Inula* with oblong, entire, rough Leaves, a hairy Stalk divided by a Corymbus, and Flowers growing in Clusters. *Conyza Pannonica lanuginosa. C. B. P. 265.* Hungarian woolly Fleabane.

8. *INULA foliis lanceolatis, serratis, subamplexicaulibus, subtus villosis, caule ramoso erecto.* Lin. Sp. Pl. 882. *Inula* with Spear-shaped, sawed Leaves embracing the Stalk, hairy on their under Side, and an erect branching Stalk. *After palustris luteus, folio longiore lanuginoso. Tourn. Inst. 483.* Yellow Marsh Starwort with a longer woolly Leaf.

9. *INULA foliis lanceolatis semiamplexicaulibus hispida, caulibus subunifloris teretibus.* Lin. Sp. Pl. 883. *Inula* with Spear-shaped prickly Leaves, half embracing the Stalk, which is taper and has but one Flower. *After luteus, foliis folio hirsuto. C. B. P. 266.* Yellow *After* with a hairy Willow Leaf.

10. *INULA foliis ovatis, hirsutis, semiamplexicaulibus, caule ramoso piloso, squamis calycinis lanceolatis.* *Inula* with oval hairy Leaves, half embracing the Stalk, which is branching and hairy, and Spear-shaped Scales to the Empalement. *Helenium Cisti folio non crenato, magno flore. Vaill. Acad. R. S. 1720.* Elecampane with a Rock Rose unnotched Leaf, and a large Flower.

11. *INULA foliis ovato-lanceolatis denticulatis sessilibus, caule piloso erecto Corymbofo.* *Inula* with oval, Spear-shaped, indented Leaves, sitting close to the Stalk, and an upright hairy Stalk, terminating in a Corymbus.

12. *INULA foliis linearibus carnosissimis tricuspidatis, caule fruticoso.* *Inula* with narrow fleshy three-pointed Leaves, and a shrubby Stalk. *After Canariensis frutescens, folio tridentato crassa. Hort. Chelf. 26.* Shrubby Canary Starwort with a thick Leaf, ending in 3 Points.

13. *INULA foliis linearibus hirsutis oppositis, pedunculis nudis unifloris.* *Inula* with narrow hairy Leaves, placed opposite, and naked Foot Stalks, having 1 Flower. *After saturejæ foliis conjugatis & pilosis, flore luteo. Haussl. Mss.* Starwort with hairy savoury Leaves growing by Pairs, and a yellow Flower.

14. *INULA caule erecto hispido, foliis lanceolatis asperis, floribus alaribus solitariis sessilibus, terminalibus umbellatis.* *Inula* with an erect prickly Stalk, Spear-shaped rough Leaves, Flowers proceeding singly from the Sides of the Stalks, sitting close, and terminating in an Umbel. *After luteus Marianus Salignis brevioribus foliis hirsutis pubescentibus, summo caule ramosus. Pluk. Mant. 30.* Yellow Starwort of Maryland, with shorter, fallow, hairy Leaves, and the Top of the Stalk branching.

15. *INULA foliis lanceolatis acutis, subtus trinerviis, squamis calycinis acutis caule fruticoso.* *Inula* with Spear-shaped acute Leaves, having 3 Veins on their under Side; the Scales of the Empalement sharp pointed, and a shrubby Stalk.

The 1st Sort grows naturally in several Parts of England, but is also cultivated in Gardens for the Sake of their Roots, which are used in Medicine, and are accounted Carminative, Sudorifick, and Alexipharmick, of great Service in Shortness of Breath, Coughs, Stuffing of the Lungs, and infectious Distempers.

It hath a perennial Root, thick, branching, and of a strong Odour. The lower Leaves are 8 or 9 Inches long, and 4 broad in the Middle, rough on their upper Side, but downy on their under. The Stalks rise about 3 Feet high, and divide toward the Top into several smaller Branches, and are garnished with oblong oval Leaves, which are indented on their Edges, and end in acute Points. The Flowers terminate their Stalks, each Branch ending with 1 large, yellow, radiated Flower, sitting in a scaly Empalement, whose Scales are oval, and placed like Scales on Fishes over each other. The Flowers are succeeded by narrow four-cornered Seeds crowned with Down. It flowers in June and July, and the Seeds ripen the latter End of August.

This Sort may be propagated by Seeds, which should be sown in Autumn, soon after they are ripe, for if they are kept till the Spring, they seldom grow; but where they are permitted to scatter, the Plants will come up the following Spring without any Care, and may be either transplanted the following Autumn, or if they are designed to remain, they should be hoed out to the Distance of 10 Inches, or a Foot each Way, and constantly kept clean from Weeds; these Roots will be fit for Use the 2d Year.

But most People propagate this by Offsets, which, if carefully taken from the old Roots, with a Bud, or Eye, to each, will take Root very easily; the best Time for this is the Autumn, as soon as the Leaves begin to decay; these should be planted in Rows about a Foot asunder, and 9 or 10 Inches distant in the Rows; the Spring following the Ground must be kept clean from Weeds, and if in Autumn it is slightly dug, it will promote the Growth of the Roots; these will be fit for Use after 2 Years Growth, but the Roots will abide many Years, if permitted to stand; however the young Roots are preferable to those which are old and stringy. It loves a gentle loamy Soil, not too dry.

The 2d Sort hath a perennial Root, from which arise several Stalks, about 2 Feet high. The Leaves at Bottom are oval, indented, and hairy; those above embrace the Stalks with their Base. The Stalks are divided into several Branches, garnished with a few scattering yellow

low Flowers. The Root has a very sweet Odour when broken. It flowers in *July*, but rarely ripens Seeds here.

The 3d Sort hath a perennial Root, from which arises many Spear-shaped Leaves, smooth and recurved. The Stalks rise near 2 Feet high; they are angular, and branch at the Top into several Foot Stalks, each sustaining one yellow radiated Flower. It flowers in *June*, *July*, and *August*, and the Seeds ripen in *September*.

The 4th Sort rises with an upright Stalk, between 3 and 4 Feet high, with Spear-shaped Leaves, turned backward, indented on their Edges, and rough on their upper Side. The Flowers are collected in close Bunches on the upper Part of the Stalks; they are small and yellow. It grows on the *Alps*, and other mountainous Parts of *Europe*. It flowers in *June*, and the Seeds ripen in Autumn.

The 5th Sort grows naturally on the Sea Coasts in many Parts of *England*. I have seen it growing plentifully near *Sbeernefs*, in the Isle of *Sbeepy*, in *Kent*; this rises with an upright Stalk, a Foot and a Half high, garnished with fleshy succulent Leaves, which come out in Clusters, about an Inch and a Quarter long, and one Eighth of an Inch broad, ending in 3 Points. The Flowers come out at the Top of the Stalks in small Umbels; they are yellow, and have a Border of Rays; this flowers in *July*, and the Seeds ripen in Autumn. The younger Branches of this Plant are frequently sold in the *London* Markets for *Samphire*, but this is a great Abuse, because this Plant has none of the warm aromatick Taste of the true *Samphire*.

The 6th Sort grows naturally in *Germany*; this rises with upright Stalks, a Foot and a Half high, garnished with Spear-shaped Leaves, covered with soft Hairs, and entire. The Stalks do each support 1 large yellow Flower, which appears in *July*, but rarely ripens Seeds here.

The 7th Sort has a perennial Root, and an annual Stalk; this grows naturally in *Hungary*. The Leaves are oblong and hairy. The Stalks branch at the Top in Form of a *Corymbus*. The Flowers are small, yellow, and are in close Clusters; these appear in *July*, but seldom perfect Seeds in *England*.

The 8th Sort grows naturally in *Austria*, *Bohemia*, and other Parts of *Germany*; this hath a perennial Root, and an annual Stalk, which rises near 2 Feet high, garnished with Spear-shaped woolly Leaves, which are sawed, and closely embrace the Stalks with their Base. The upper Part of the Stalk divides into 2 or 3 erect Branches, or Foot Stalks, each sustaining 1 pretty large deep yellow Flower; these are in Beauty in *July*, but seldom ripen Seeds here.

The 9th Sort grows naturally in the South of *France*, *Spain*, and *Italy*; this hath a perennial Root, from whence arise several Stalks, about 1 Foot high; the lower Leaves are Spear-shaped and prickly, the upper half embrace the Stalks, which divide into several Branches, each being terminated by 1 yellow Flower. This Flowers in *July*, but seldom perfects Seeds here.

The 10th Sort hath a perennial Root, and an annual Stalk, which rises about a Foot high, dividing into many Branches, garnished by oval hairy Leaves, which half embrace the Stalks with their Base; each of the

Branches is terminated by 1 large yellow Flower, whose Empalement is composed of oval Scales. It flowers in *July* and *August*, but never perfects Seeds in this Country.

The 11th Sort grows naturally in *Hungary*; this rises with single upright Stalks, near 2 Feet high, garnished with oval Spear-shaped Leaves, slightly indented on the Edges, sitting close to the Stalks, which are hairy, and dividing in Form of a *Corymbus* at the Top. The Flowers are pretty large, of a pale yellow Colour, and appear in *July*, but are not succeeded by Seeds in this Country.

The 12th Sort grows naturally in the *Canary* Islands; this rises with several shrubby Stalks, near 4 Feet high, which divide into smaller Branches, garnished with Clusters of narrow fleshy Leaves, divided into 3 Parts at their Points. The Flowers come out on the Side of the Branches at the Top of the Stalks; they are small, and of a pale yellow Colour, appearing in *August*.

The 2d, 3d, 4th, 6th, 7th, 8th, 9th, 10th, and 11th Sorts, are abiding Plants, which will thrive and flower in the open Air in *England*; they may be all propagated by parting their Roots. The best Time for doing this is in Autumn, at which Time the Plants may be removed; these may be intermixed with other flowering Plants in the Borders of large Gardens, where they will make an agreeable Variety during their Continuance in flower. As these Roots multiply pretty fast, they should be allowed Room to spread, therefore should not be planted nearer than 2 Feet from other Plants; and if they are removed every third Year, it will be often enough, provided the Ground between them be dug every Winter, and, in Summer, if they are kept clear from Weeds, they will require no other Care.

As some of these Sorts produce good Seeds in *England*, they may be propagated by sowing the Seeds in the Spring, on a Border of light Earth exposed to the East, where the Morning Sun only is admitted, and when the Plants appear, they should be kept clean from Weeds till they are fit to remove, when they should be transplanted on a shady Border, 6 Inches asunder; during the Summer Season they should be kept clean from Weeds, and in Autumn they may be transplanted where they are to remain.

The 5th Sort grows naturally in the Salt Marshes which are flowed by the Tides, and is seldom admitted into Gardens. The Roots are perennial, but the Stalks decay in Autumn; and if any one has Curiosity to keep a Plant or two of it in their Gardens, they may transplant it into a shady Border from the Place of its natural Growth, and, by keeping it moist in dry Weather, it will thrive pretty well, but the Stalks will not rise so high, nor will the Leaves be near so fleshy as in the Salt Marshes.

The 12th Sort will not live abroad in the open Air in *England*, during the Winter Season, so must be removed into Shelter in Autumn, but should have as much free Air as possible at all Times, when the Weather is mild, otherwise it is apt to draw up weak. In cold Weather the Plants must have very little Water, for their Stalks and Leaves being succulent, are very apt to rot with too much Wet; in Summer they should be placed abroad with other hardy exotick Plants, in a

sheltered Situation, where they will add to the Variety, though they are Plants of no great Beauty, and seldom flower in England, unless the Summer is very warm. This is easily propagated by Cuttings, any Time in Summer, which, if planted in a shady Border, will take Root in a short Time.

The 13th Sort was discovered growing at *La Vera Cruz*; this rises with a shrubby Stalk, about 2 Feet high, dividing into many smaller Branches, which are hairy, and garnished with narrow stiff Leaves, placed opposite, without Foot Stalks; from the Edges of these arise long Hairs, which are stiff, and come out by Pairs; at the End of the Branches arise the naked Foot Stalks, 4 or 5 Inches long, sustaining 1 small yellow radiated Flower.

This is propagated by Seeds, which must be sown on a hot Bed, and the Plants treated afterward as other tender Exoticks; they require a Bark Stove to preserve them through the Winter in England.

The 14th Sort was sent me from *Maryland*, where it grows naturally; this rises with a strong Stalk, about a Foot and a Half high, pretty closely set with prickly Hairs, and garnished with rough Spear-shaped Leaves, about 3 Inches long, and near 1 Inch broad in the Middle; toward the upper Part of the Stalk there are single Flowers coming from the Wings at each Joint, and the Stalk is terminated by a Cluster of small yellow Flowers, disposed in Form of an Umbel. This Plant flowers here in *August*, but has not as yet perfected Seeds in England.

The 15th Sort was discovered growing naturally at *Cartagena*, by the late Dr. *Houffoun*; this rises with a shrubby Stalk 10 or 12 Feet high, dividing into several ligneous Branches, garnished with Spear-shaped Leaves, 5 Inches long, and 1 Inch and a Half broad in the Middle, and smooth on their upper Side, but on the under have 3 longitudinal Veins. The Flowers are produced at the End of the Branches, having very large scaly Empalements; they are as large as a small Sun Flower, of a pale yellow Colour.

This Plant is too tender to live in the open Air in England, so must be constantly kept in the Bark Stove. It is propagated by Seeds, which must be procured from the Country where it grows naturally, for it does not produce any here; these must be sown on a hot Bed, and when the Plants are fit to remove, they should be each planted into a small Pot filled with light Earth, and plunged into a fresh hot Bed, treating them as other tender Plants of the same Country.

JOHNSONIA. Dale. *Callicarpa*. Lin. Gen. Pl. 127. *Spondylococcus*. Mitch. 20. This Plant was titled by the late Dr. Dale of South Carolina, in Memory of Dr. Johnson, who published an Edition of *Gerard's Herbal*, corrected and improved.

The Characters are,

The Flower hath an Empalement of 1 Leaf, cut at the Brim into short Segments, which are erect. It hath 1 Petal, which is tubulous, and divided into 4 Parts at the Brim, which spread open. It hath 4 slender Summits, longer than the Petal, terminated by oblong yellow Summits. In the Center is situated a roundish Germen, supporting a slender Style, crowned by a thick obtuse Stigma. The

Germen becomes a smooth globular Berry, inclosing 4 hard oblong Seeds.

We have but one Species of this Genus, viz.

JOHNSONIA floribus verticillatis sessilibus, foliis ovato-lanceolatis oppositis, caule fruticoso. Dale. Shrubby *Johnsonia* with oval Spear-shaped Leaves, sitting close to the Stalks, and placed opposite, and Flowers growing in Whorls. *Callicarpa*. Ait. Upsal. 1741, and Mr. Catesby, in his History of Carolina, has figured it under the following Title, *Frutex baccifer verticillatus, foliis scabris latis dentatis & conjugatis, baccis purpureis dense congestis*, Vol. II. p. 47.

This Shrub grows plentifully in the Woods near *Charles Town*, in South Carolina. It rises from 4 to 6 Feet high, sending out many Branches from the Side, woolly when young, like those of the Wayfaring Tree, and garnished with oval Spear-shaped Leaves, placed opposite by Pairs, standing on pretty long Foot Stalks; they are about 3 Inches long, and 1 Inch and a Quarter broad in the Middle, growing narrow at both Ends; they are a little indented on their Edges, their Surface rough, and a little hoary. The Flowers come out in Whorls round the Stalks, sitting very close to the Branches at the Foot Stalks of the Leaves; they are small, tubulous, cut into 4 obtuse Segments at the Top, which expand, and are of a deep purple Colour; these are succeeded by soft succulent Berries, which turn first to a bright red Colour, but afterward change to a deep purple when ripe, and inclose 4 hard oblong Seeds.

The Seeds of this Plant were sent by Mr. Catesby, from Carolina, in 1724, and many of them were raised in several curious Gardens in England; most, if not all, of them were afterward planted in the open Air, where they flourished very well for several Years, and several of the Plants produced Flowers in the *Chelsea Garden* for 4 or 5 Years, but these were not succeeded by Fruit; and in the severe Frost in 1740, they were most of them destroyed, as were also the young Plants which were raised from Dr. Dale's Seeds the Year before, which were only sheltered under a Frame, so that until the Doctor sent a fresh Supply of Seeds in 1744, there were scarce any of the Plants living in the English Gardens.

This Plant rises easily from Seeds, if they are sown in a moderate hot Bed; the best Way is to sow the Seeds in Pots, and plunge them into a Tan Bed, and when the Plants come up, and have obtained some Strength, they should be gradually inured to the open Air, into which they should be removed in June, and placed in a sheltered Situation, where they may remain till Autumn, during which Time they must be kept clear from Weeds, and gently refreshed with Water in dry Weather, but as these young Plants are tender, they should be placed under a Frame before the early Frost comes on, for a Frost in Autumn will kill the tender Part of their Shoots, which often causes their Stalks to decay most Part of their Length before the Spring. During the Winter Season they should be screened from Frost, but in mild Weather they must enjoy the free Air, otherwise their Shoots will turn mouldy and decay. The following Spring, just before the Plants shoot, they should be carefully turned out of the Pots, so as not to break their Roots, and Part of them may be planted.

planted in small Pots filled with light Earth, and the others into a Nursery Bed in a warm Situation, at about 4 or 5 Inches asunder; those in the Pots should be plunged into a moderate hot Bed, which will forward their taking fresh Root, but afterward must be hardened to bear the open Air as before; these Plants in Pots should be sheltered under a Frame in Winter for 3 or 4 Years, till they have obtained Strength, then they may be turned out of the Pots, and planted in a warm Situation, where they will live in the open Air in common Winters, but in severe Frost they are in Danger of being killed, if they are not sheltered, therefore the Surface of the Ground about their Roots should be covered with old Tan to keep out the Frost, and their Tops covered with Straw, Peas Haulm, or Fern, which will protect them.

Those Plants in the Beds should also be covered with Mats, or Straw, in frosty Weather, and after they have obtained Strength, they may be transplanted into a warm Situation, and treated every Winter as the other.

The Leaves of this Shrub were often used by Dr. Dale, in dropical Cases, with very good Success. A particular Account of the Virtues of this, and many other Plants of *Carolina*, was sent me, with dried Samples of each, by the Doctor during the last War, but as the Ships were taken in their Passage, they were all lost, and the Doctor dying soon after, I could never recover them.

JONQUIL. See Narcissus.

IPOMOEA. *Lin. Gen. Pl.* 199. *Quamoclit. Tourn. Inst. R. H.* 116, *Tab.* 39. *Quamoclit*, or Scarlet Convolvulus.

The Characters are,

The Flower hath a small permanent Empalement, cut into 5 Parts at the Top. The Petal is Funnel-shaped, having a long cylindrical Tube, whose Brim is 5 pointed, spreading open flat. It hath 5 Awl-shaped Stamens, nearly the Length of the Petal, terminated by roundish Summits. In the Bottom of the Tube is situated a round Germen, supporting a slender Style, crowned by a roundish Stigma. The Germen becomes a roundish Capsule with 3 Cells, inclosing 3 oblong Seeds.

The Species are,

1. *IPOMOEA foliis pinnatifidis linearibus, floribus solitariis.* *Hort. Cliff.* 60. *Ipomoea* with very narrow many-pointed Leaves, and solitary Flowers. *Quamoclit foliis tenuiter incis. & pinnatis.* *Tourn. Inst. R. H.* 116. *Quamoclit* with narrow cut, and winged Leaves.

2. *IPOMOEA foliis cordatis acuminatis, basi angulatis, pedunculis multifloris.* *Hort. Upsal.* 39. *Ipomoea* with Heart-shaped pointed Leaves, angular at the Base, and many Flowers on a Stalk. *Quamoclit Americana folio bederæ flore coccineo.* *Com. Rar. Pl.* 21. *American Quamoclit* with an Ivy Leaf and a scarlet Flower, commonly called Scarlet Convolvulus.

3. *IPOMOEA foliis cordatis acutis integerrimis, floribus solitariis.* *Prod. Leyd.* 430. *Ipomoea* with acute Heart-shaped entire Leaves, and solitary Flowers. *Quamoclit Americana solani folio, flore roseo.* *Plum. Cat.* 3. *American Quamoclit* with a Nightshade Leaf, and a Rose-coloured Flower.

4. *IPOMOEA foliis cordatis integerrimis, floribus confertis, corollis indivisis.* *Santh. Monsp.* 114. *Ipomoea* with

Heart-shaped entire Leaves, Flowers growing in Clusters, and undivided Petals. *Quamoclit foliis amplissimis cordiformibus.* *Plum. Cat.* 4. *Quamoclit* with large Heart-shaped Leaves.

5. *IPOMOEA foliis palmatis, lobis septenis lanceolatis integerrimis.* *Hort. Upsal.* 39. *Ipomoea* with Hand-shaped Leaves composed of 7 Spear-shaped entire Lobes. *Convolvulus major heptaphyllus, flore sulphureo odorato.* *Sloan. Cat.* 55. Greater seven leaved Bindweed with a yellow sweet Flower, called Spanish Arbour Vine.

6. *IPOMOEA foliis trilobis cordatis, pedunculis trifloris.* *Lin. Sp. Pl.* 161. *Ipomoea* with Heart-shaped Leaves having 3 Lobes, and 3 Flowers on a Foot Stalk. *Convolvulus pentaphyllus minor, flore purpureo.* *Sloan. Cat.* 55. Smaller 5 leaved Bindweed with a purple Flower.

7. *IPOMOEA foliis palmatis, floribus aggregatis.* *Flor. Zeyl.* 79. *Ipomoea* with Hand-shaped Leaves, and Flowers growing in Clusters. *Volubilis Zeylanica pes tigrinus dicta.* *Hort. Elth.* 318. *Volubilis* of Ceylon, called Tyger's Foot.

8. *IPOMOEA foliis digitatis glabris, foliolis sessilibus, caule lævi.* *Lin. Sp. Pl.* 162. *Ipomoea* with smooth Hand-shaped Leaves, whose Lobes sit close, and a smooth Stalk. *Convolvulus quinquefolius glaber Americanus.* *Pluk. Alm.* 116. Smooth five leaved American Bindweed.

The 1st Sort grows naturally in both *Indies*; in the *West-Indies* it is called Sweet William, and by some *Indian Pink*. It rises with a twining Stalk 7 or 8 Feet high, sending out many slender twining Branches, which twist about any neighbouring Plants for Support; the Leaves are winged, being composed of several Pair of very fine narrow Lobes, not thicker than fine sewing Thread; they are about an Inch long, of a deep green, and sometimes are by Pairs opposite, and at others they are alternate; the Flowers come out singly from the Side of the Stalks, standing on slender Foot Stalks about an Inch long; they are Funnel-shaped; having a Tube an Inch long, which is narrow at Bottom, but gradually widens to the Top, which spreads open flat, with 5 Corners or Angles; they are of a most beautiful scarlet Colour, so make a fine Appearance. This is an annual Plant in *England*, but whether it is so in its native Place I cannot tell; for as the Seeds fall to the Ground, there is a Succession of young Plants, which continue flowering great Part of the Year.

This is a tender Plant, so will not thrive in the open Air in *England*; it is propagated by Seeds, which should be sown on a hot Bed in the Spring, and as the Plants will soon appear, they should be each transplanted into a small Pot filled with light Earth, before they twine about each other, for then it will be difficult to disengage them without breaking their Tops. When they are potted, they should be plunged into a new hot Bed, and Sticks placed down by each Plant for their Stalks to twine about; after they have taken new Root, they should have a good Share of Air in warm Weather, to prevent their drawing up weak; and when they are advanced too high to remain under the Frame, they should be removed into the Tan Bed in the Stove, where they should have Support, for their Branches will extend to a considerable Distance. In this Place they will begin to flower in *June*, and there will be a Succession

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sion of Flowers till the End of September, and the Seeds will ripen very well.

The 2d Sort grows naturally in *Carolina*, and the *Babama Islands*; this is also an annual Plant in *England*, but is not so tender as the former. It hath a twining Stalk which rises 5 or 6 Feet high, garnished with Heart-shaped Leaves ending in acute Points, and divided into Angles at their Base; the Flowers come out from the Side of the Branches, upon slender Foot Stalks which support 3 or 4 Flowers of the same Form and Size as the former, but not so deep coloured. There is a Variety of this with Orange-coloured Flowers, but they do not differ in any other respect. If the Seeds of this Sort are sown on a warm Border of light Earth in the Spring, the Plants will come up, and in favourable Seasons will flower and produce good Seeds; but most People raise the Plants on a very gentle hot Bed, and transplant them afterwards into the Borders, by which Method they are brought forward, so will perfect their Seeds earlier.

The 3d Sort is like the 2d, but the Leaves have no Angles, and the Flowers are of a Rose Colour, each Foot Stalk sustaining 1 Flower. This may be treated as the second Sort.

The 4th Sort grows naturally in the *West-Indies*, where it twines about any neighbouring Support, and rises 10 or 12 Feet high, garnished with large Heart-shaped entire Leaves; the Flowers come out from the Side of the Branches, upon slender Foot Stalks in Clusters; they are of a blue Colour, and their Brims are not angular as in the former Species, but entire. This Sort is propagated by Seeds, which should be sown on a hot Bed in the Spring, and the Plants afterward treated as the first Sort, for it is too tender to thrive in the open Air here.

The 5th Sort is cultivated in most of the Islands in the *West-Indies*, but is supposed to have been introduced there from the *Spanish Main*. These Plants rise to a very great Height, and send out many Branches, so are planted to cover Arbours for Shade in the Islands, from whence it had the Appellation of *Spanish Arbour Vine*. The Stalks of this Plant are covered with a purple Bark, they twine about any neighbouring Support, sending out many Side Branches, so that one Plant will cover an Arbour of 50 Feet long. The Leaves are divided into 7 Lobes almost to the Bottom, the Flowers come out from the Sides of the Stalks, they are large, Funnel-shaped, of a bright yellow Colour, and smell very sweet; these are succeeded by large roundish Capsules with 3 Cells, containing 1 large Seed in each, of a dark Colour.

This is a perennial Plant, but too tender to thrive in the open Air in *England*; the Seeds must be sown on a hot Bed in the Spring, and when the Plants come up they must be transplanted into separate Pots, and plunged into a fresh hot Bed; but as they will soon grow too tall to stand under a Frame, they should be removed into the Bark Stove, where they must be supported, otherwise they will twine about all the neighbouring Plants. As these Plants extend their Shoots to a very great Length, they require a tall Stove, where they may have Room to grow, without which they will never produce any Flowers. I have had these Plants several Years,

but have only seen 1 Flower produced from them; for they grow so very large before they begin to have Flowers, that few of the Stoves in *England* have Height enough for their Growth.

The 6th Sort grows naturally in most of the Islands in the *West-Indies*; it hath a twining Stalk, which rises 10 or 12 Feet high, garnished with Leaves divided into 3 Lobes, which are Heart-shaped; the Foot Stalks arise from the Side of the Stalks, each sustaining 3 purple Flowers. This is also tender, so the Plants must be raised on a hot Bed in the Spring, and afterward planted in separate Pots, plunging them into another hot Bed, where they may remain till they reach the Glasses, when they should be removed into a Glass Case, where they may have Room, and be screened from the Cold, but should have a large Share of free Air admitted to them in warm Weather; with this Treatment, the Plants will flower and produce ripe Seeds.

The 7th Sort grows naturally in *India*; this rises with a twining hairy Stalk 4 or 5 Feet high, garnished with Hand-shaped Leaves which are hairy, and divided to the Bottom into several Lobes; the Flowers come out in Clusters, inclosed in a five cornered Involucrum; they are of a purplish Colour, but small, and open only in the Evening, so make no Figure. This is propagated by Seeds, and requires the same Treatment as the 6th Sort.

The 8th Sort grows naturally in the *West-Indies*; this hath a smooth twining Stalk, which rises 4 or 5 Feet high, garnished with Hand-shaped Leaves having 5 Lobes, which sit close to the Stalks; the Flowers come out from the Side of the Stalks upon short Foot Stalks, which sustain 2 or 3 purple Flowers, these are succeeded by round triecapular Seed Vessels, in each Cell there is 1 brown Seed.

This Sort requires the same Treatment as the 2 former, with which it will produce Flowers and perfect its Seeds in *England*.

IRIS. *Tourn. Inst. R. H.* 358. *Tab.* 186, 187, 188. *Lin. Gen. Pl.* 57. Flower-de-luce; in French, *Flambe*.

The Characters are,

The Flowers are inclosed in Spathe (or Sheaths) which are permanent; the Flowers are divided into 6 Parts, the 3 outer are oblong, obtuse, and reflexed, the 3 inner are erect, and end in acute Points, these all join at their Base: They have 3 Awl-shaped Stamina, which lie upon the reflexed Petals, and are terminated by oblong depressed Summits. Under the Flower is situated an oblong Germen, supporting a slender Style, crowned by a large 3 pointed Stigma; the Germen becomes an oblong angular Capsule with 3 Cells, filled with large Seeds.

The Species are,

1. *IRIS corollis imberbis, petalis interioribus stigmatibus minoribus, foliis ensiformibus.* *Hort. Cliff.* 19. Iris with an unbearded Flower, the inner Petals smaller than the Stigma, and Sword-shaped Leaves. *Iris palustris lutea.* *Tabern. Icon.* 643. Yellow Marsh Flower-de-luce.

2. *IRIS corollis barbata, caule foliis longiore multiflora.* *Hort. Cliff.* 18. Iris with bearded Flowers, the Stalks longer than the Leaves, and having many Flowers. *Iris vulgaris Germanica sive silvestris.* *C. B. P.* 30. Common German, or wild Flower-de-luce.

3. *IRIS corollis barbata, scapo nudo longitudine foliorum*

rum multifloro. Prod. Leyd. 17. Iris with a bearded Flower, and a naked Stalk the Length of the Leaves, with many Flowers. *Iris latifolia, caule apophyllo. C. B. P. 32.* Broad leaved Flower-de-luce, whose Stalks are without Leaves.

4. *IRIS corollis barbatis, caule subfolioso longitudine foliorum multifloro. Prod. Leyd. 17. Iris* with a bearded Flower, and a leafy Stalk the Length of the Leaves, with many Flowers. *Iris latifolia Pannonica, colore multiplici. C. B. P. 31.* Broad leaved Hungarian Flower-de-luce of many Colours.

5. *IRIS corollis barbatis, caule foliis longiore unifloro. Hort. Cliff. 18. Iris* with a bearded Flower, and a Stalk longer than the Leaves, having 1 Flower. *Iris fusiana, flore maximo ex albo nigricante. C. B. P. 31.* Flower-de-luce with a very large Flower of a black and white Colour, commonly called *Chalcedonian Iris*.

6. *IRIS corollis barbatis, caule foliis brevior multifloro. Hort. Upf. 17. Iris* with a bearded Flower, and a Stalk shorter than the Leaves, with many Flowers. *Iris humilis major, saturatè purpurea biflora. Tourn. Inst. 361.* Greater Dwarf Flower-de-luce of a dark purple Colour, and having 2 Flowers on each Stalk.

7. *IRIS corollis barbatis, caule foliis brevior unifloro. Lin. Sp. Pl. 38. Iris* with a bearded Flower, and a Stalk shorter than the Leaves with 1 Flower. *Iris humilis minor, flore purpureo. Tourn. Inst. 361.* Smaller Dwarf Flower-de-luce with a purple Flower.

8. *IRIS corollis barbatis, caule foliis longiore multifloro, foliis ensiformibus. Iris* with a bearded Flower, a Stalk longer than the Leaves with many Flowers, and Sword-shaped Leaves. *Iris Asiatica cærulea polyanthos. C. B. P.* Blue Asiatic Flower-de-luce with many Flowers, called greater *Dalmatian Iris*.

9. *IRIS corollis barbatis, germinibus trigonis, foliis ensiformibus longissimis caule foliis longiore bifloro. Pluk. 154. Iris* with a bearded Flower, a three cornered Germen, very long Sword-shaped Leaves, and a Stalk longer than the Leaves with 2 Flowers.

10. *IRIS corollis imberbibus, germinibus sexangularibus, caule ancipiti, foliis linearibus. Hort. Cliff. 19. Iris* with Flowers having no Beards, a six cornered Germen, a Stalk having Flowers on both Sides, and narrow Leaves. *Iris angustifolia prunum redolens minor. C. B. P. 33.* Smaller narrow leaved Flower-de-luce smelling like Plums.

11. *IRIS corollis imberbibus, caule foliis brevior trifloro, foliis lineari-ensiformibus. Iris* whose Flowers are not bearded, the Stalk shorter than the Leaves, having 3 Flowers, and narrow Sword-shaped Leaves. *Iris angustifolia maritima, major. C. B. P. 33.* Greater narrow leaved maritime Flower-de-luce.

12. *IRIS corollis imberbibus, caule foliis æqualibus multifloro, spatula majoribus erectis. Iris* whose Flowers have no Beards, the Stalks equal in Length with the Leaves, and having many Flowers larger and more erect than the Spatha. *Iris angustifolia, maritima minor. C. B. P.* Smaller narrow leaved maritime Flower-de-luce.

13. *IRIS corollis imberbibus, caule foliis longiore multifloro, germinibus sexangularibus, foliis linearibus. Iris* whose Flowers have no Beards, the Stalks longer than the Leaves with many Flowers, a six cornered Germen, and very narrow Leaves. *Iris angustifolia, bico-*

lor. C. B. P. 33. Narrow-leaved Flower-de-luce with 2 Colours.

14. *IRIS corollis imberbibus, germinibus sexangularibus, caule tereti, foliis sublinearibus. Hort. Cliff. 19. Iris* whose Flowers have no Beards, with a six cornered Germen, a taper Stalk, and very narrow Leaves. *Iris pratensis angustifolia, folio fætido. C. B. P. 32.* Narrow leaved Meadow Flower-de-luce, with a stinking Leaf.

15. *IRIS corollis imberbibus, spatula bifolia, caule foliis longitudine foliorum, pedunculis longioribus. Iris* with Flowers having no Beards, a Sheath containing 2 Leaves, a leafy Stalk the Length of the Leaves, and longer Foot Stalks to the Flowers. *Iris sativa lutea. C. B. P. 32.* Yellow Garden Flower-de-luce.

16. *IRIS corollis imberbibus, caule longitudine foliorum multifloro, foliis ensiformibus. Iris* with an unbearded Flower, a Stalk the Length of the Leaves with many Flowers, and Sword-shaped Leaves. *Iris humilis minor, flore picto. Tourn. Inst. 362.* Lesser Dwarf Flower-de-luce with a painted Flower.

17. *IRIS corollis imberbibus, caule unifloro foliis brevior, radice fibrosa. Flor. Virg. 10. Iris* with an unbearded Flower, a Stalk shorter than the Leaves, with 1 Flower, and a fibrous Root. *Iris Virginiana pumila sive chamæiris verna angustifolia, flore purpureo-cæruleo odorato. Pluk. Alm. 196.* Dwarf Spring Virginia Flower-de-luce, with a narrow Leaf, and a purple blue sweet smelling Flower.

18. *IRIS corollis imberbibus, germinibus subtrigonis, caule tereti, foliis ensiformibus. Lin. Sp. Pl. 39. Iris* with an unbearded Flower, a three cornered Germen, a taper Stalk, and Sword-shaped Leaves. *Iris Americana versicolor stylo crenato. Dill. Hort. Elth. 188.* Par-ty-coloured American Flower-de-luce, with a crenated Style.

19. *IRIS corollis imberbibus petalis internis longitudine stigmati, foliis ensiformibus. Hort. Cliff. 19. Iris* with an unbearded Flower, the inner Petals as long as the Stigma, and Sword-shaped Leaves. *Iris fætidissima, seu Xyris. Tourn. Inst. 360.* Most stinking Flower-de-luce, or Xyris, called Stinking Gladwyn.

20. *IRIS corollis imberbibus, germinibus trigonis, caule tereti, foliis linearibus. Lin. Hort. Cliff. 19. Iris* with an unbearded Flower, a three cornered Germen, a taper Stalk, and narrow Leaves. *Iris pratensis, angustifolia non fætida altior. C. B. P. 32.* Taller narrow leaved Meadow Flower-de-luce, not stinking.

21. *IRIS corollis imberbibus, foliis tetragonis. Vir. Cliff. 6. Iris* with an unbearded Flower and four cornered Leaves. *Hermodactylus folio quadrangulo. Tourn. Cor. 50.* Hermodactyle with a four cornered Leaf.

The 1st Sort grows naturally in Ditches and standing Waters in most Parts of England, this is titled in the *Pharmacopeia*, *Acorus adulterinus*, or *Pseudo acorus*, Bastard Acorus. The Roots of this are pretty thick, fleshy, and spread every Way near the Surface of the Ground; the Leaves are Sword-shaped, very long, of a deep green Colour, and not so stiff as those of the Garden *Iris*; the Stalks rise from 3 to near 4 Feet high, toward the Top of which, grow 3 or 4 Flowers, one above another, which gradually succeed each other; they are shaped like the ordinary Flower-de-luce, but the

the 3 inner Petals are less than the Stigmas, so they want the 3 upright Petals which are termed Standards. These appear in *June*, and are succeeded by large 3 cornered Capsules, containing 3 Rows of flat Seeds.

This Sort is not cultivated in Gardens, but being an official Plant, it is here mentioned to introduce the other.

The 2d Sort grows naturally in *Germany*, but has been long cultivated in the *English* Gardens for Ornament; the Roots are very thick, fleshy, and divided into Joints, spreading just under the Surface of the Ground; they are of a brownish Colour on their Outside, but white within; the Leaves arise in Clusters embracing each other at their Base; but spread asunder upward in Forms of Wings; they are a Foot and a Half long, and 2 Inches broad, having sharp Edges ending in Points like Swords; the Stalks between these, which are a little longer than the Leaves, having at each Joint 1 Leaf without Foot Stalk; these diminish in their Size upward, the Stalks divide into 3 Branches, each of which produce 2 or 3 Flowers one above another at Distances, inclosed in a Sheath; they have 3 large Violet-coloured Petals which turn backward, and are called Falls; these have Beards near an Inch long on their Mid-rib toward their Base, and have a short arched Petal which covers the Beard, with 3 broad erect Petals of the same Colour, called Standards; the Stamina lie on the reflexed Petals. Under each Flower is situated an oblong Germen, which turns to a large three cornered Capsule with 3 Cells, filled with large compressed Seeds. This flowers in *June*, and the Seeds ripen in *August*.

There is a Variety of this with blue Standards and purple Falls, titled, *Iris bortenfis latifolia*, by *Caspar Baubin*; and one with pale purple Standards, another with white, and a third a smaller Flower, but these are accidental Varieties from Seeds.

The 3d Sort has broader Leaves than the last, the Stalks have no Leaves upon them, are equal in Length with the Leaves; they have 3 or 4 large bright purple Flowers, which stand above each other, having purplish Sheaths or Hoods; the 3 bending Petals or Falls are striped with white, from the Base to the End of the Beard; the Flowers are succeeded by large blunt triangular Capsules with 3 Cells, filled with compressed Seeds. It flowers the latter End of *May*, and the Seeds ripen in the Beginning of *August*.

The 4th Sort grows naturally in *Hungary*; the Leaves are like those of the 2d Sort, but are of a darker green; the Stalks rise as tall as the Leaves, and toward the Bottom are garnished with 1 Leaf at each Joint, whose Base embraces the Stalks; the upper Part is naked, and branches into three, each having 2 or 3 Flowers above one another; the 3 upright Petals or Standards are yellow, and the bending Petals or Falls are variegated with purple Stripes. This flowers in *June*, but is rarely succeeded by Seeds in *England*.

The 5th Sort grows naturally near *Constantinople*, and in other Parts of the East. The Leaves of this Sort are not so broad as those of the second, and are of a grayish Colour; the Stalks rise 2 Feet and a Half high, supporting 1 very large Flower; the 3 upright Petals are almost as broad as a Hand but very thin; of a mixed striped black and white; the 3 bending Petals

or Falls are of a darker Colour, from whence some Gardeners have called it the Mourning *Iris*. This flowers the latter End of *May*, or the Beginning of *June*, but never has any Seeds in *England*.

The 6th Sort hath broad Leaves like those of the 2d Sort, but shorter; the Stalks rise 9 or 10 Inches high, branching into 2 or 3 at the Top, each sustaining 2 deep purple Flowers. This flowers in *May*, but is not succeeded by Seeds in *England*.

The 7th Sort hath narrower and shorter Leaves than the former; the Stalks are shorter than the Leaves, and support 1 Flower on the Top of a light purple Colour. This flowers the Beginning of *May*, but rarely produces Seeds in this Country. There are 2 or 3 Varieties of this, which differ in the Colour of their Flowers.

The 8th Sort hath the largest Leaves of any of the Flower-de-luce, they are of a grayish Colour and spread wide, embracing each other at their Base, where they are purplish. The Stalks rise near 4 Feet high, and divide into several Branches, each supporting 3 or 4 Flowers above each other at Distances, covered with a thin Sheath; the 3 bending Petals or Falls, are of a faint purple inclining to blue, with purple Veins running lengthways; the Beard is yellow, and the 3 erect Petals or Standards are of a bright blue with some faint purple Stripes, the Flowers have an agreeable Scent. They appear the latter End of *June*, but are seldom succeeded by Seeds in *England*.

The Seeds of the 9th Sort were brought from *Carniola*, by the Right Rev. Dr. *Pacock* Bishop of *Offory*, who found the Plants growing there naturally: These were sown in the *Chelsea* Garden, where they succeeded very well, and the Plants have been seen since communicated to many curious Gardens in *Europe*.

This Plant hath a thick fleshy Root, divided into many Knots or Tubers, which spread and multiply in the Ground; these send out many strong thick fleshy Fibres, which strike deep in the Earth, putting out several smaller Fibres from their Sides. From these Roots arise Clusters of flat Sword-shaped Leaves of a deep green Colour, more than 3 Feet long, and little more than 1 Inch broad in the broadest Part, ending in Points; these Leaves are connected together at their Base into several Heads or Bundles, wrapping over each other; and between these arise the Flower Stalks, which grow 4 Feet high, and are jointed, having very long Spathæ or Sheaths at each of the upper Joints, which include the Flowers. These Stalks generally sustain 2 Flowers, 1 coming out of each Sheath or Spathæ; these are permanent, and when the Flowers are past, closely cover the Seed Vessel. The Flowers are divided into 9 Leaves, 3 of these stand erect, which are white, and 6 turn down; these are joined together at their Base, the lower spreading out into a broad, obtuse, reflexed Fall, having a Beard, of a bright yellow Colour; the upper Segment is arched over the lower, so as to form a Sort of Lip, reflexed backward; under these is situated an oblong three cornered Germen, which afterward becomes an oblong, swollen, three cornered Seed Vessel, ending in a long Point, which opens into 3 longitudinal Cells, in which the Seeds are ranged; these are angular and compressed. This Plant flowers the latter End of *June*, or Beginning of *July*, and the

Seeds

Seeds ripen in Autumn. It is very hardy and thrives well in the open Air without any Protection. The Leaves decay to the Root in Autumn, and new ones arise in Spring. The Roots also propagate very fast, when in a light moist Soil, so that it may soon be had in Plenty, without waiting for Plants from Seeds.

The 10th Sort grows naturally in *Austria*; this hath narrow flat Grass-like Leaves about a Foot long, of a light green Colour; between these arise the Stalks about 6 Inches high, having 2 narrow green Leaves, much longer than the Stalks; these Stalks sustain 2 or 3 Flowers, smaller than any of the former Species; the Petals have no Beards, but have a broad yellow Line adorned with purple Stripes; the 3 Falls are of a light purple Colour striped with blue, and have a convex Ridge running longitudinally, the other are of a reddish purple variegated with violet; these have a Scent like fresh Plums. It flowers in *July*, and is succeeded by Seed Vessels which are short, having 3 Borders or Wings running lengthways, opening in 3 Cells, filled with angular Seeds, which ripen in *September*.

The 11th Sort grows naturally near the Sea, in the South of *France* and in *Italy*. This hath narrow Sword-shaped Leaves more than a Foot long, of a deep green Colour; the Stalks do not rise so tall as the Leaves, they sustain at the Top 2 or 3 Flowers which stand near together; they are of a bright purple Colour with very deep Falls, and the 3 Standards are blue; the bending Petals have no Beards, but instead of that white broad Stripes through the Middle. This flowers in *July*, and the Seeds ripen in *September*.

The 12th Sort hath narrower Leaves than the former, but of the same deep green Colour; the Stalks do not rise higher than the Leaves, and support 2 or 3 Flowers, which have long permanent Empalements standing erect, which cover the Seed Vessel till the Seeds are ripe; the Flowers are smaller, and of a paler Colour than those of the eleventh Sort.

The 13th Sort has very narrow long Grass-like Leaves, of a light green; the Stalks rise 2 Feet and a Half high, sustaining 3 or 4 Flowers above each other, which have blue Falls, and purple Standards striped with pale blue Lines. This flowers in *July*, and the Seeds ripen at *Michaelmas*.

The 14th Sort grows naturally in *Germany*; this hath Leaves like those of the 11th Sort, which, when broken, have a disagreeable Scent; but this is accidental, and not common to all the Plants; the Stalks of this are taper, and rise a little above the Leaves; these sustain 3 or 4 Flowers one above another, which have light blue Standards, and purple variegated Falls without Beards; instead of which, they have a broad white Line in the Middle; these are succeeded by short thick Capsules, which have scarce any Angles, opening in 3 Cells, filled with angular Seeds. It flowers in *July*, and the Seeds ripen in *September*.

The 15th Sort has narrower Leaves than those of the second, of a pale green Colour, and not so stiff; the Stalks are equal in Height with the Leaves, and branch out on both Sides, with long Foot Stalks, each sustaining 1 pretty large yellow Flower, inclosed in a long 2 leaved Sheath; at each Joint where the Foot Stalks come out, there is a single Leaf, which embraces the Stalks with

their Base. This flowers in *June*, but rarely produces Seeds in this Country.

There are 2 Varieties of this Sort, one with a Sulphur-coloured, the other with a variegated Flower, which are supposed to be only Varieties accidentally produced from Seeds.

The 16th Sort hath broad Sword-shaped Leaves about 8 Inches long; the Stalks rise about the same Height with the Leaves, and divide into 2 or 3 Foot Stalks, each sustaining 2 or 3 Flowers one above another, which have yellow Standards, and the Falls are variegated with dark Stripes. This flowers in *June*, but does not produce Seeds here.

The 17th Sort grows naturally in *North America*; this hath tufted fibrous Roots, from which arise many Grass-like Leaves about 9 Inches long; from between these come out the Stalks, shorter than the Leaves, supporting 1 purple Flower with blue Standards. This Sort flowers in *May*, but seldom produces Seeds in *England*.

The 18th Sort grows also in *North America*; this hath narrow Sword-shaped Leaves about a Foot long, of a light green Colour; the Stalks rise a little above the Leaves, they are taper, and support 2 or 3 Flowers one above another; the Standards are of a light blue, and the Falls are purple variegated, with a broad white Line instead of a Beard through the Middle. The Germen which is situated under the Flower is three cornered below, but taper toward the Top. This flowers in *June*, and often produces Seeds here.

The 19th Sort grows naturally in moist Places in many Parts of *England*, so is seldom admitted into Gardens. This hath thick tufted fibrous Roots, the Leaves are of a Grass green Sword-shaped, and when broken emit a strong Odour, not much unlike that of hot roast Beef at the first Scent, but if smelt too close, becomes disagreeable. It is generally called stinking Gladwyn in *England*, the Stalks rise about the same Height with the Leaves, supporting 2 small Flowers of a purple Colour, variegated. It flowers in *June*, and the Seeds ripen in the Autumn.

The 20th Sort grows naturally in *Austria* and *Bohemia*; this hath narrow Sword-shaped Leaves near a Foot and a Half long, of a dark green Colour; the Flower Stalks rise above the Leaves, and support 2 or 3 Flowers with light blue Standards, and deep blue Falls, with a broad Stripe of white, instead of the Beard. This flowers in *July*, and the Seeds ripen in *September*.

There are several Varieties of these Flag or Sword-leaved *Iris*es, which chiefly differ in the Colour of their Flowers, so are not to be regarded as distinct Sorts; those here enumerated are supposed to be different Species, great Part of them I have cultivated by Seeds, and found them constantly produce the same as the Parent Plants.

All these Sorts are generally propagated by parting their Roots, which do most of them multiply fast enough. The best Time to remove and part the Roots is in Autumn, that they may get good Root before the Spring, otherwise they will not flower strong the following Summer. All those Sorts which spread much at their Roots, should be transplanted every other Year, to keep them within Bounds, otherwise they will spread so much as to become troublesome, especially if planted near other

Flowers; indeed the large growing Kinds are most of them too spreading for the Flower Garden, so are only fit to fill up the Spaces between Trees and Shrubs in large Plantations, where they will have a good Effect during the Time of their flowering.

The 5th, 6th, 7th, 10th, 11th, 16th, 17th, and 18th Sorts, grow in less Compass, so may be admitted into the large Borders, or in Clumps of Flowers in the Pleasure Garden, where they will add to the Variety. The 5th Sort should have a warmer Situation, being a little tender, but all the other Sorts will grow in almost any Soil, or Situation; these may all be propagated by Seeds, which should be sown soon after they are ripe, then the Plants will come up the following Spring; but if the Seeds are sown in Spring, they will lie a Year in the Ground before they vegetate; when the Plants come up, they must be kept clean from Weeds, and the following Autumn should be transplanted into Beds at 10 Inches or a Foot Distance, where they may remain till they flower, which will be the second Summer after transplanting, but as most of the Sorts are so easily propagated by their Roots, few People care to wait for seeding Plants, unless of those Sorts which are scarce.

The 21st Sort grows naturally in the Islands of the Archipelago; this hath a tuberous knobbed Root, from which arise 5 or 6 long, narrow, four cornered Leaves, between which arise the Stalk, which supports one Flower, shaped like those of the *Iris*, but small, and of a dark purple Colour. This flowers in April, but does not produce Seeds in England. It is propagated by the Roots, which send out Offsets; these may be taken up, and transplanted when their Leaves decay, but should not be kept too long out of the Ground. If these are planted in a deep loose Soil, the Roots will run down, and be lost in a few Years where they are not disturbed, so they should be annually transplanted, and have a shallow Soil; they are hardy in Respect to Cold, and require no farther Care but to keep them clean from Weeds.

IRIS bulbosa. }
IRIS Persica. } See Xiphium.

ISATIS. Tourn. Inst. R. R. 211. Tab. 100. Lin. Gen. Pl. 738. Woad; in French, *Pastel*.

The Characters are,

The Empalement of the Flower is composed of 4 oval coloured Leaves, which spread open, and fall away. The Flower hath 4 oblong Petals, placed in Form of a Cross, narrow at their Base, but broad and obtuse at their Ends. It hath 6 Stamina, 4 of which are as long as the Petals, the other 2 are shorter; these are terminated by oblong lateral Summits. It has an oblong compressed Germen, the Length of the 2 shorter Stamina, crowned by an obtuse Stigma. The Germen becomes an oblong compressed Pod, with 1 Cell, opening with 2 Valves, inclosing 1 oval compressed Seed in the Center.

The Species are,

1. ISATIS foliis radicalibus oblongo-ovatis obtusis integerrimis, caulinis sagittatis filiculis oblongis. Woad with oblong, oval, blunt, entire Leaves at Bottom, but those on the Stalks Arrow-pointed, and oblong Pods. *Isatis sativa vel latifolia*. C. B. P. 113. Broad leaved cultivated Woad.

2. ISATIS foliis radicalibus lanceolatis integerrimis, cau-

linis sagittatis, filiculis angustioribus. Woad with Spear-shaped entire lower Leaves, those on the Stalks Arrow-shaped, and narrower Pods. *Isatis sylvestris vel angustifolia*. C. B. P. 113. Wild narrow leaved Woad.

3. ISATIS foliis radicalibus lanceolatis crenatis, caulinis lineari-sagittatis, filiculis brevioribus emarginatis. Woad with Spear-shaped lower Leaves, slightly crenated; those on the Stalks very narrow, and Arrow-pointed, and shorter indented Pods. *Isatis Dalmatica major*. Bobart. Greater Woad of Dalmatia.

4. ISATIS foliis radicalibus crenatis, caulinis sagittatis, filiculis angustioribus villosis. Woad with crenated lower Leaves, those on the Stalks Arrow-pointed, and narrow hairy Pods. *Isatis sylvestris, minor Lusitanica*. H. L. App. Smaller wild Portugal Woad.

The 1st Sort is cultivated in several Parts of England, for Dying, for it is used as a Foundation for many of the dark Colours.

This is a Commodity well worth propagating in all Places where the Land is suitable for it, which must be a pretty strong Soil, but not too moist.

This Plant is biennial, in which it differs from most of the other Sorts, which are annual. The lower Leaves of this are of an oblong oval Figure, and pretty thick Consistence; they are narrow at their Base, but broad above, and end in obtuse roundish Points; they are entire on their Edges, and of a lucid green. The Stalks rise near 4 Feet high, dividing into several Branches, garnished with Arrow-shaped Leaves, sitting close to the Stalks; the Ends of the Branches are terminated by small yellow Flowers, in very close Clusters, composed of four small Petals, placed in Form of a Cross; these are succeeded by Pods shaped like a Bird's Tongue, half an Inch long, and one Eighth of an Inch broad, which, when ripe, turn black, and open with 2 Valves, having 1 Cell, in which is situated a single Seed. It flowers in July, and the Seeds ripen the Beginning of September.

The 2d Sort has been supposed to be the same Species as the first, and only differing by Culture; but I have propagated both Sorts more than 30 Years, and have not found either of them alter; there are also very essential Differences between the 2 Plants, the first is the Shape of the under Leaves, which in the wild Sort are narrow and Spear-shaped, and those on the Stalks are not more than half the Breadth of those of the cultivated Woad. The Stalks do not branch so much, and the Pods are narrower than those of the other Sort, nor do the Roots abide so long, for they generally die the same Year.

The 3d Sort grows naturally in Dalmatia; this is a biennial Plant; the lower Leaves are Spear-shaped, and crenated on their Edges, but those on the Stalks are very narrow, and Arrow pointed. The Stalks branch more than those of the 1st Sort, and rise higher. The Flowers are larger, and of a brighter yellow Colour. The Seed Vessels are shorter, and broader at their Ends, which are indented. These Plants all flower in July, and their Seeds ripen in September.

The 4th Sort grows naturally in Portugal; it is an annual Plant, whose lower Leaves are narrow and crenated, but those on the Stalks are Arrow pointed; they are of a pale green, and much thinner than those of the other Sorts. The Flowers are small, of a Sulphur Colour, and the Seed Vessels are narrow and hairy.

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The 3 last Sorts are not cultivated for Use, so are only preserved in Botanick Gardens for Variety; they are propagated by Seeds, which should be sown in Autumn, and when the Plants come up, they must be thinned, leaving them six Inches a-part, and afterward kept clean from Weeds; the Summer following they will flower and produce ripe Seeds, after which the 2d and 4th Sorts soon decay, but the Roots of the 1st and 3d Sorts will live another Year.

The 1st Sort which is propagated for Use, is sown upon fresh Land in good Heart, for which the Cultivators of Woad pay a large Rent; they generally choose to have their Land situated near great Towns, where there is Plenty of Dressing, but they never stay long on the same Spot, for the best Ground will not admit of being sown with Woad more than twice, and if it is oftener repeated, the Crop seldom pays the Charges of Culture, &c.

Those who cultivate this Commodity, have Gangs of People who have been bred to this Employment, so that whole Families travel about from Place to Place, where-ever their Principal fixes on Land for the Purpose, but these People go on in one Track, just as their Predecessors taught them, nor have their Principals deviated much from the Practice of their Ancestors, so that there is a large Field for Improvement, if any of the Cultivators of Woad were Persons of Genius, and could be prevailed on to introduce the Garden Culture so far as it may be adapted to this Plant; this I know from Experience, having made Numbers of Trials on the Culture of this Plant, therefore I shall insert them here for the Benefit of those who may have Ingenuity enough to strike out of the old beaten Track.

As the Goodness of Woad consists in the Size and Fatness of the Leaves, the only Method to obtain this, is by sowing the Seed upon Ground at a proper Season, and allow the Plants proper Room to grow, as also to keep them clean from Weeds, which, if permitted to grow, will rob the Plants of their Nourishment. The Method practised by some of the most skilful Kitchen Gardeners in the Culture of Spinach, would be a great Improvement to this Plant, for some of them have improved the round leaved Spinach so much by Culture, as to have the Leaves more than six Times the Size they were formerly, and their Fatness has been in the same Proportion, upon the same Land, which has been effected by thinning the Plants when young, and keeping the Ground constantly clean from Weeds; but to return to the Culture of Woad.

After having made Choice of a proper Spot of Land, which should not be too light and sandy, nor over stiff and moist, but rather a gentle Hazel Loam, whose Parts will easily separate; the next is to plough this up just before Winter, laying it in narrow high Ridges, that the Frost may penetrate through the Ridges, to mellow and soften the Clods; then in the Spring plough it again Crossway, laying it again in narrow Ridges; after it has lain some Time in this Manner, and the Weeds begin to grow, it should be well harrowed to destroy them; this should be twice repeated while the Weeds are young, and if there are any Roots of large perennial Weeds, they must be harrowed out, and carried off the Ground. In

June the Ground should be a third Time ploughed, when the Furrows should be narrow, and the Ground stirred as deep as the Plough will go, that the Parts may be as well separated as possible, and when the Weeds appear again, the Ground should be well harrowed to destroy them. Toward the End of July, or the Beginning of August, it should be ploughed the last Time, when the Land should be laid smooth, and when there is a Prospect of Showers, the Ground must be harrowed to receive the Seeds, which should be sown either in Rows with the Drill Plough, or in Broad-cast after the common Method, but it will be proper to steep the Seeds one Night in Water before they are sown, which will prepare them for Vegetation, if the Seeds are sown in Drills with a Plough, they will be covered by an Instrument fixed to the Plough for that Purpose, but those which are sown Broad-cast in the common Way, must be well harrowed in. If the Seeds are good, and the Season favourable, the Plants will appear in a Fortnight, and in a Month or 5 Weeks will be fit to hoe; for the sooner this is performed when the Plants are distinguishable, the better they will thrive, and the Weeds being then young, will be soon destroyed. The Method of hoeing these Plants, is the same as for Turneps, with this Difference only, that these Plants need not be thinned so much, for at the first hoeing, if they are separated to the Distance of 3 or 4 Inches, and at the last to 6 Inches, it will be Space enough for the Growth of them; if this is carefully performed, and in dry Weather, most of the Weeds will be destroyed, but as some of them may escape in this Operation, and young Weeds will arise, the Ground should be a second Time hoed in October, always choosing a dry Time for this Work; at this second Operation the Plants should be singled out to the Distance they are to remain. After this the Ground will be clean from Weeds till the Spring, when young Weeds will come up, therefore about a Fortnight in April will be a good Time to hoe the Ground again, when the Weeds will be young; it may be performed in less than half the Time it would require if the Weeds were permitted to grow large, and the Sun and Wind will much sooner kill them; this hoeing will also stir the Surface of the Ground, and greatly promote the Growth of the Plants; if this is performed in dry Weather, the Ground will be clean till the first Crop of Woad is gathered, after which it must be again well cleaned, if this is carefully repeated, after gathering each Crop, the Land will always lie clean, and the Plants will thrive the better. The Expence of the first Hoeing will be about 6 Shillings per Acre, and for the after Hoeings half that Price will be sufficient, provided they are performed when the Weeds are young, for if they are suffered to grow large, it will require more Labour, nor can it be so well performed.

If the Land, in which this Seed is sown, should have been in Culture before for other Crops, so not in good Heart, it will require Dressing before it is sown, in which Case rotten Stable Dung is preferable to any other, but this should not be laid on till the last Ploughing before the Seeds are sown, and not spread but as Land is ploughed, that the Sun may not exhale the Goodness of it, which in Summer is soon lost, when

spread on the Ground. The Quantity should not be less than 20 Loads to each Acre, which will keep the Ground in Heart till the Crop of Woad is spent.

The Time for gathering the Crop is according to the Season, but it should be performed as soon as the Leaves are fully grown, while they are perfectly green, for when they begin to change pale, great Part of their Goodness is over, for the Quantity will be less, and the Quality greatly diminished.

If the Land is good, and the Crop well husbanded, it will produce 3 or 4 Gatherings, but the two first are the best; these are commonly mixed together in manufacturing it, but the after Crops are always kept separate, for if these are mixed with the other, the whole will be spoiled. The two first Crops will sell from 25 to 30 Pounds a Ton, but the latter will not bring more than 7 or 8 Pounds, and sometimes not so much. An Acre of Land will produce a Ton of Woad, and in good Seasons near a Ton and a Half.

When the Planters intend to save the Seeds, they cut 3 Crops of the Leaves, and then let the Plants stand till the next Year for Seed, but if only one Crop is cut, and that only of the outer Leaves, letting all the Middle Leaves stand to nourish the Stalks, the Plants will grow stronger, and produce a much greater Quantity of Seeds.

These Seeds are often kept 2 Years, but it is always best to sow new Seeds when they can be obtained. The Seeds ripen in August, when the Pods turn to a dark Colour the Seeds should be gathered; it is best done by reaping the Stalks as Wheat, and spreading them in Rows upon the Ground, and in 4 or 5 Days the Seeds will be fit to thresh out, provided the Weather is dry; for if it lies long, the Pods will open and let out the Seeds.

There are some of the Woad Planters, who feed down the Leaves in Winter with Sheep, which is a very bad Method, for all Plants which are to remain for a future Crop, should never be eaten by Cattle, for that greatly weakens them, therefore those who eat down their Wheat in Winter with Sheep, are equally blameable.

ISOPYRUM. *Lin. Gen. Pl. 621. Helleborus. Amman.*

The Characters are,

The Flower has no Empalement. It hath 5 oval Petals, which are equal, and fall off, and 5 short tubulous Nectaria, situated within the Petals, divided at their Brim into 3 Lobes; the Middle one being the largest. It hath a great Number of short hairy Stamina, terminated by single Summits, and several oval Germina with single Styles of their own Length, crowned by obtuse Stigmas the Length of the Stamina. The Germina become so many recurved Capsules with 1 Cell filled with small Seeds.

The Species are,

1. ISOPYRUM *stipulis subulatis, petalis acutis. Hort. Upf. 157. Isopyrum with Awl-shaped Stipulæ, and acute Petals. Helleborus fumarie foliis. Amman. Rub. 57. Tab. 12. Hellebore with Furnitory Leaves.*
2. ISOPYRUM *stipulis ovatis, petalis obtusis. Lin. Sp. Pl. 557. Isopyrum with oval Stipulæ, and obtuse Petals. Ranunculus nemorosus, thalictri folio. C. B. P. 178. Wood-Crowsfoot with a Meadow Rue Leaf.*
3. ISOPYRUM *stipulis obsoletis. Lin. Sp. Pl. 557. Iso-*

pyrum with obsolete Stipulæ. Aquilegia montana, flore parvo, thalictri folio. C. B. P. 144. Mountain Columbine with a small Flower, and Meadow Rue Leaf.

The 1st Sort grows naturally in Siberia, from whence the Seeds were sent to the imperial Garden at Petersburg, and the late Dr. Animan, Professor of Botany there, sent me part of the Seeds; this is an annual Plant, which seldom rises more than 3 or 4 Inches high. The Leaves are shaped like those of Furnitory; they are small, and of a gray Colour. The Stalk is naked to the Top, where there is a Circle of Leaves just under the Flowers. The Flowers are small, of an herbaceous Colour on their Outside, but yellow within, having 5 acute Petals, and as many honey Glands, with a great Number of Stamina, shorter than the Petals, and several reflexed Moon-shaped Germina, having so many single Styles, crowned by obtuse Stigmas. The Flowers are succeeded by many recurved Seed Vessels with 1 Cell, filled with small shining black Seeds. It flowers the Beginning of April, and the Seeds ripen in May, then the Plants decay.

The Seeds of this Plant should be sown in a shady Border, soon after they are ripe, for when they are kept long out of the Ground, they seldom grow the first Year; therefore, when the Seeds are permitted to scatter, they succeed very well, and require no other Care but to keep them clean from Weeds; as there is no great Beauty in this Plant, a small Patch or two of them in any shady Part of the Garden, for Variety, will be sufficient.

The 2d and 3d Sorts were sent me from Verona, near which place they grow naturally. The 2d Sort hath Leaves very like those of the smallest Meadow Rue. The Stalks rise 4 or 5 Inches, supporting a few small white Flowers, with obtuse Petals; these are succeeded by several recurved Seed Vessels, containing many small Seeds. It flowers the latter End of March, and the Seeds ripen in May.

The 3d Sort hath Leaves like the 2d, but a little larger, and of a greener Colour. The Stalks rise about 6 Inches high, supporting 2 or 3 small white Flowers, shaped like those of the 2d Sort; these are succeeded by recurved Seed Vessels, filled with small Seeds. It flowers in April, and the Seeds ripen in June.

Both these Plants delight in a moist shady Situation; they are propagated by Seeds as the first Sort, but they will live two or three Years.

ISORA. See Helicteres.

ITEA. *Lin. Gen. Pl. 243. Flor. Virg. 143. Diconan-gia. Mitch. Gen. 5.*

The Characters are,

The Empalement of the Flower is small, permanent, and erect, ending in 5 acute Points. The Flower has 5 Petals, inserted in the Empalement. It hath 5 Awl shaped Stamina inserted in the Empalement, as long as the Petals, terminated by roundish Summits, and an oval Germen supporting a cylindrical Style, which is permanent, crowned by an obtuse Stigma. The Germen becomes a long oval Capsule, with the Style at the Top, having 1 Cell filled with small Seeds.

We have but one Species of this Genus, viz.

ITEA. *Flor. Virg. 143.* We have no English Title for this Plant.

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This Shrub grows in moist Soils in several Parts of North America, where it rises to the Height of 6 or 7 Feet, sending out many Branches on every Side, from the Ground upward, garnished with Spear-shaped Leaves, placed alternately; they are slightly sawed on their Edges, reflexed, veined, and of a light green. At the Extremity of the same Year's Shoots, in the Month of July, are produced fine Spikes of white Flowers, 3 or 4 Inches long, and erect; when these Shrubs are in Vigour, they will be entirely covered with these Spikes of Flowers, so that they make a fine Appearance at their Season of flowering.

At present this Shrub is not very common in England; the only Garden where I have seen it in Vigour, is that of his Grace the Duke of Argyle, at Whitton, near Hounslow, where the Soil agrees so well with it, that it thrives and flowers there as well as in its native Country.

This Shrub will live in the open Air in England, the Cold never injuring it, but it will not thrive upon dry gravelly Ground, being very apt to die in such Places in the Summer Season. It is propagated by Layers, but as these are commonly 2 Years before they take Root, it cannot be propagated in such Plenty as were to be wished; for as this Shrub flowers at a Season when there are few others in Beauty, it is the more valuable.

JUDAICA ARBOR. See Cercis.

JUGLANS. Lin. Gen. Pl. 950. Nux. Tourn. Infl. R. H. 581. Tab. 346. Walnut; in French, Noisetier.

The Characters are,

It hath male and female Flowers at Distances on the same Tree. The male Flowers are disposed in an oblong Rope, or Katkin, which is cylindrical and imbricated, with Spaces between the Scales, each Scale has 1 Flower, with 1 Petal fixed in the outer Center, toward the Outside of the Scale. The Petal is divided into 6 equal Parts; in the Center is situated many short Stamina, terminated by erect acute Summits. The female Flowers grow in small Clusters, sitting close to the Branches; these have a short, erect, four pointed Empalement, sitting on the Germen, and an acute erect Petal, divided into 4 Parts. Under the Empalement sits a large oval Germen, supporting 2 short Styles, crowned by large reflexed Stigmas. The Germen becomes a large oval dry Berry, with one Cell, inclosing a large oval Nut with netted Furrows, whose Kernel hath 4 Lobes, variously furrowed.

The Species are,

1. JUGLANS foliolis ovalibus glabris subserratis subæqualibus. Hort. Cliff. 449. Walnut with oval Lobes, smooth, sawed, and equal. Nux juglans sive Regia vulgaris. C. B. P. 417. Common Walnut.

2. JUGLANS foliolis lanceolatis acutè serratis, intermediis majoribus. Walnut with Spear-shaped Lobes, sharply sawed, the Middle being the largest. Nux juglans Virginiana nigra. H. L. 452. Black Virginia Walnut.

3. JUGLANS foliolis cordato-lanceolatis infernè nervosis, pediculis foliorum pubescentibus. Walnut with Heart Spear-shaped Lobes, having many Veins on their under Side, and downy Foot Stalks to the Leaves. Juglans nigra, fructu oblongo profundissime insculpto. Cat. Hort. Black Virginia Walnut with an oblong Fruit very deeply furrowed.

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4. JUGLANS foliolis lanceolatis serratis, exterioribus latioribus. Lin. Sp. Pl. 997. Walnut with Spear-shaped sawed Lobes, the outer being the broadest. Nux Juglans alba Virginensis. Park. Theat. 1414. White Virginia Walnut, or Hickery Nut.

5. JUGLANS foliolis cuneiformibus serratis, exterioribus majoribus. Walnut with Wedge-shaped Lobes, sawed, the outer being the largest. Juglans alba fructu minori cortice glabro. Clayt. Flor. Virg. White Walnut with a smaller Fruit, and a smooth Bark.

6. JUGLANS foliolis lanceolatis serratis glabris subæqualibus. Walnut with smooth Spear-shaped sawed Lobes, which are equal. Juglans alba fructu ovato compresso, nucleo dulce, cortice squamoso. Clayt. Flor. Virg. White Walnut with an oval compressed Fruit, a sweet Kernel, and a scaly Bark, commonly called Shagbark in America.

There are several Varieties of the common Walnut, distinguished by the following Titles: The large Walnut, the thin shelled Walnut, the French Walnut, the late ripe Walnut, and the double Walnut, but these all vary when raised by the Seed, so that the Nuts from the same Tree will produce Plants, whose Fruit will differ, therefore there can be no Dependence upon the Trees raised from Nuts, till they have produced Fruit, so that those Persons who plant the Trees for their Fruit, should make Choice of them in the Nurseries when they have their Fruit upon them, otherwise they may be deceived by having such as they would not choose.

The 2d Sort is commonly called Black Virginia Walnut; this grows to a large Size in North America. The Leaves of this Sort are composed of 5 or 6 Pair of Spear-shaped Lobes, which end in acute Points, and are sawed on their Edges; the lower Pair of Lobes are the least, the other gradually encrease in their Size to the Top, where the Pair at the Top, and the single Lobe which terminates the Leaf, are smaller; these Leaves, when bruised, emit a strong aromack Flavour, as do also the outer Cover of the Nuts, which are rough, and rounder than those of the common Walnut. The Shell of the Nut is very hard and thick, and the Kernel small, but very sweet.

The 3d Sort grows naturally in North America, where the Trees grow to a large Size. The Leaves are composed of 7 or 8 Pair of long Heart-shaped Lobes, broad at their Base, where they are divided into 2 round Ears, but terminate in acute Points; they are rougher, and of a deeper green than those of the second Sort, and have nothing of the aromack Scent which they have. The Fruit is very long. The Shell is deeply furrowed, and very hard. The Kernel is small, but well flavoured.

The 4th Sort is very common in most Parts of North America, where it is called Hickery Nut. The Leaves are composed of 2 or 3 Pair of oblong Lobes, terminated by an odd one; these are of a light green, and sawed on their Edges; the lower Pair of Lobes are the smallest, and the upper the largest. The Fruit is shaped like common Walnut, but the Shell is not furrowed, and is of a light Colour.

The 5th Sort is not so large as the 4th. The Leaves are composed of 2 Pair of Lobes, terminated by an odd one; these are narrow at their Base, but broad and rounded

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rounded at their Ends; they are sawed on their Edges, and of a light green. The Nuts are small, have a smooth Shell, and very hard and white.

The 6th Sort grows naturally in *North America*, where it rises to a middling Stature. The Leaves of this Sort are composed of 3 Pair of smooth Spear-shaped Lobes, of a dark green Colour, sawed on their Edges, and ending in acute Points. The Fruit is oval, the Shell white, hard, and smooth; the Kernel small, but very sweet. The young Shoots of the Tree are covered with a very smooth brownish Bark, but the Stems and older Branches have a rough scaly Bark, from whence it had the Appellation of Shagbark, in *America*.

The common Walnut is propagated in many Parts of *England* for the Fruit, and formerly the Trees were propagated for their Wood, which was in very great Esteem, till the Quantity of Mahogany, and other useful Woods which have been of late Years imported into *England*, have almost banished the Use of Walnut.

These Trees are propagated by planting their Nuts, which, as was before observed, seldom produces the same Sort of Fruit; so that the only Way to have the desired Sort, is to sow Nuts of the best Kinds; and if this is done in a Nursery, the Trees should be transplanted out when they have had 3 or 4 Year's Growth, to the Place where they are designed to remain, for these Trees do not bear transplanting when of a large Size, therefore there may be a good Number of Trees planted, which need not be put at more than 6 Feet apart, which will be Distance enough for them to grow till they produce Fruit; when those whose Fruit are of the desired Kind may remain, and the others cut up, to allow them Room to grow; by this Method a sufficient Number of the Trees may be generally found among them to remain, which will thrive and flourish greatly when they have Room; but as many People do not care to wait so long for the Fruit, the next best Method is to make Choice of some young Trees in the Nurseries, when they have their Fruit upon them; but though these Trees will grow and bear Fruit, they will never be so large or so long lived, as those planted young.

All the Sorts of Walnuts which are propagated for Timber, should be sown in the Places where they are to remain; for the Roots of these Trees always incline downward, which being stopped or broken, prevent their aspiring upward, so that they afterwards divaricate into Branches, and become low spreading Trees; but such as are propagated for Fruit, are greatly mended by transplanting; for hereby they are rendered more fruitful, and their Fruit generally larger and fairer; it being a common Observation, That downright Roots greatly encourage the luxuriant Growth of Timber in all Sorts of Trees, but such Trees as have their Roots spreading near the Surface of the Ground, are always the most fruitful.

The Nuts should be preserved in their outer Covers in dry Sand until *February*, when they should be planted in Lines, at the Distance you intend them to remain; but in the Rows they may be placed pretty close, for Fear the Nuts should miscarry; and the young Trees, where they are too thick, may be removed, after they

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have grown two or three Years, leaving the Remainder at the Distance they are to stand.

In transplanting these Trees, you should always observe never to prune either their Roots or large Branches both which are very injurious to them; nor should you be too busy in lopping or pruning the Branches of these Trees while growing, for it often causes them to decay; but when there is a Necessity of cutting any of their Branches off, it should be done early in *September*, that the Wound may heal over before the Cold increases; and the Branches should always be cut off quite close to the Trunk, otherwise the Stump which is left will decay, and rot the Body of the Tree.

The best Season for transplanting these Trees is as soon as the Leaves begin to decay, at which Time, if they are carefully taken up, and their Branches preserved entire, there will be little Danger of their succeeding, although they are 8 or 10 Years old, as I have several Times experienced; though, as was before observed, these Trees will not grow so large, nor continue so long, as those which are removed young.

This Tree delights in a firm, rich, loamy Soil, or such as is inclinable to Chalk or Marl; and will thrive very well in stony Ground, and on chalky Hills, as may be seen by those large Plantations near *Leatherhead*, *Godstone*, and *Carshalton* in *Surry*, where are great Numbers of these Trees planted upon the Downs, which annually produce large Quantities of Fruit, to the great Advantage of their Owners; one of which I have been told, farms the Fruit of his Trees, to those who supply the Markets, for 30*l. per Annum*.

The Distance these Trees should be placed, ought not to be less than 40 Feet, especially if Regard be had to their Fruit; though when they are only designed for Timber, if they stand near, it promotes their upright Growth. The black *Virginian* Walnut is much more inclinable to grow upright than the common Sort, and the Wood being generally of a more beautiful Grain, renders it preferable to that, and better worth cultivating. I have seen some of this Wood beautifully veined with black and white, which, when polished, has appeared at a Distance like veined Marble. This Wood is greatly esteemed by Cabinet Makers for Inlaying, as also for Bedsteads, Stools, Tables, and Cabinets; and is one of the most durable Woods for those Purposes of *English* Growth, being rarely infected with Insects of any Kind (which may proceed from its extraordinary Bitterness;) but it is not proper for Buildings of Strength, it being of a most brittle Nature, and exceeding subject to break very short, though it commonly gives Notice thereof, by its cracking some Time before it breaks.

The general Opinion, that beating this Fruit improves the Trees, I do not believe, since in doing this, the younger Branches are generally broken and destroyed; but as it would be exceeding troublesome to gather it by Hand, so in beating it off, great Care should be taken that it be not done with Violence, for the Reason before assigned. In order to preserve the Fruit, it should remain upon the Trees till it is thorough ripe, when it should be beaten down, and laid in Heaps for two or three Days; after which they should be spread abroad, when, in a little Time, their Husks will easily

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part from the Shells; then you must dry them well in the Sun, and lay them up in a dry Place, where Mice or other Vermin cannot come to them, in which Place they will remain good for 4 or 5 Months; but there are some Persons who put their Walnuts into an Oven gently heated, where they let them remain 4 or 5 Hours to dry, and then put them up in Oil Jars, or any other close Vessel, mixing them with dry Sand, by which Method they will keep good 6 Months. The putting them in the Oven is to dry the Germ, and prevent their sprouting; but if the Oven be too hot it will cause them to shrink, therefore great Care must be had to that.

All the other Sorts are propagated the same Way, but as few of the Sorts produce Fruit in England, their Nuts must be procured from North America; which should be gathered when fully ripe, and put up in dry Sand, to preserve them in their Passage to England: When they arrive here, the sooner they are planted the greater Chance there will be of their succeeding; when the Plants come up, they should be kept clean from Weeds; and if they shoot late in the Autumn, and their Tops are full of Sap, they should be covered with Mats, to prevent the early Frosts from pinching their tender Shoots, which often causes them to die down a considerable Length before Spring; but if they are screened from these early Frosts, the Shoots will become firmer and better able to resist the Cold. Some of these Sorts are tender while young, so require a little Care the two first Winters, but afterward will be hardy enough to resist the greatest Cold of this Country.

The black Virginia Walnut is full as hardy as the common Sort; there are some large Trees of this Kind in the Chelsea Garden, which have produced great Quantities of Fruit upward of 40 Years; the Nuts have generally ripened so well there as to grow, but their Kernels are small, so are of little Value.

These Trees all require the same Culture as the common Walnut, but they grow best in a soft loamy Soil not too dry, and where there is a Depth of Soil for their Roots to run down. The Hickory when young, it very tough and pliable, so the Sticks of it are much esteemed; but the Wood when grown large is very brittle, so not of any great Use. The black Virginia Walnut is the most valuable Wood of all the Sorts; some of the Trees are beautifully veined, and will take a good Polish, but others have very little Beauty, which is the Case of many other Sorts of Wood.

JUJUBE. See Ziziphus.

JULIANS, or ROCKETS. See Hesperis.

JULY FLOWER. See Dianthus.

JUNCUS. Tourn. Inst. R. H. 246. Tab. 127. Lin. Gen. Pl. 396. Rush; in French, Jonc.

The Characters are,

It hath a Chaff opening with 2 Valves, an Empalement with 6 oblong pointed little Leaves which are permanent; the Flower hath no Petals, but the coloured Empalement is by some taken for Petals. It hath 6 short hairy Stamina, terminated by oblong erect Summits. It hath a three cornered pointed Germen, with a short slender Style, crowned by 3 long hairy slender Stigmas reflexed. The Germen becomes a close three cornered Capsule with 1 Cell, opening with 3 Valves, inclosing roundish Seeds.

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The Species are,

1. JUNCUS culmo subnudo tereti mucronato, panicula terminali, involucrio diphylo spinoso. Lin. Sp. Pl. 325. Rush with a naked, taper, pointed Stalk, terminated by a Panicle, and a prickly two leaved Involucrum. Juncus acutus, capitulis forghi. C. B. P. 11. Prickly large Sea Rush.

2. JUNCUS culmo nudo, apice membranaceo incurvo, panicula laterali. Lin. Sp. Pl. 326. Rush with a naked Stalk, an incurved membranaceous Apex, and a lateral Panicle. Juncus acutus, panicula sparsa. C. B. P. Common hard Rush.

3. JUNCUS culmo nudo stricto, panicula laterali. Flor. Leyd. 44. Rush with a naked close Stalk, and a lateral Panicle. Juncus laevis, panicula sparsa, major. C. B. P. Larger common soft Rush, with a spreading Panicle.

4. JUNCUS culmo nudo stricto, capitulo laterali. Prod. Leyd. 44. Rush with a close naked Stalk and lateral Heads. Juncus laevis, panicula non sparsa. C. B. P. Soft Rush, with a more compact Panicle.

There are many other Species of this Genus which grow naturally in England, and are very troublesome Weeds in many places, so are not worthy of being enumerated here; and those which are here mentioned, is only to point out a Method of destroying them.

The 1st and 2d Sorts grow on the Sea Shores, where they are frequently watered by the Salt Water. These two Sorts are planted with great Care on the Banks of the Sea in Holland, in order to prevent the Water from washing away the Earth; which being very loose, would be in Danger of removing every Tide, if it were not for the Roots of these Rushes, which fasten themselves very deep in the Ground, and mat themselves near the Surface, so as to hold the Earth closely together. Therefore, whenever the Roots of these Rushes are destroyed, the Inhabitants immediately repair them to prevent farther Damage. In the Summer Time, when the Rushes are fully grown, the Inhabitants cut them, and tie them up in Bundles, which are dried, and afterward carried into the larger Towns and Cities, where they are wrought into Baskets, and several other useful Things, which are frequently sent into England. These Sorts do not grow so strong in England, as they do on the Maese, and some other Places in Holland, where I have seen them upward of 4 Feet high.

The 3d and 4th Sorts grow on moist strong uncultivated Lands in most Parts of England, and consume the Herbage where they are suffered to remain. The best Method of destroying these Rushes is, to fork them up clean by the Roots in July, and after having let them lie a Fortnight or three Weeks to dry, to lay them in Heaps, and burn them gently; and the Ashes which these afford, will be a good Manure for the Land; but in order to prevent their growing again, and to make the Pasture good, the Land should be drained, otherwise there will be no destroying them entirely; but after it is well drained, if the Roots are annually drawn up, and the Ground kept duly rolled, they may be subdued.

JUNIPERUS. Tourn. Inst. R. H. 588. Tab. 361. Lin. Gen. Pl. 1005. Juniper; in French, Genevrier.

The Characters are,

It hath male and female Flowers in different Plants, and sometimes

sometimes at separate Distances on the same Plant. The male Flowers grow on a conical Katkin; the Flowers are placed by Threes along the common Tail opposite, and terminated by a single one; the Scales are broad, short, lying on each other, and fixed to the Column by a very short Foot Stalk. The Flower has no Petal, but 3 Stamina in that Flower which terminates, joined in one Body below; these have 3 distinct Summits, adbering to the Scales of the lateral Flowers. The female Flowers have a small three pointed Empalement sitting upon the Germen, and is permanent; they have 3 stiff acute permanent Petals, the Germen sitting below the Empalement, supports 3 single Styles crowned by Stigmas. The Germen becomes a roundish Berry, inclosing 3 stony Seeds oblong and angular on one Side, but convex on the other.

The Species are,

1. *JUNIPERUS foliis ternis patentibus mucronatis*. Lin. Sp. Pl. 1040. Juniper with spreading sharp-pointed Leaves placed by Threes. *Juniperus vulgaris fruticosa*. C. B. P. 488. The common English Juniper.

2. *JUNIPERUS foliis ternis patentibus, longioribus acutioribusque, ramis erectioribus*. Juniper with longer and more acute pointed Leaves placed by Threes, and spreading and erect Branches. *Juniperus vulgaris arbor*. C. B. P. 488. The Tree, or Swedish Juniper.

3. *JUNIPERUS foliis ternis omnibus patentibus*. Juniper with Leaves placed by Threes, which are all of them spreading. *Juniperus Virginiana*. H. L. Folio ubique juniperino. Boerb. Ind. Cedar of Virginia, or red Cedar.

4. *JUNIPERUS foliis ternis basi adnatis, junioribus imbricatis, senioribus patulis*. Hort. Cliff. 464. Juniper with Leaves placed by Threes adhering at their Base, the young ones lying over each other, and the old ones spreading. *Juniperus Virginiana, foliis inferioribus juniperinis, superioribus sabinam, vel cypressum referentibus*. Boerb. Ind. Carolina Cedar.

5. *JUNIPERUS foliis inferioribus ternis patentibus, superioribus quadrifariam imbricatis*. Juniper with spreading under Leaves placed by Threes, and the upper by Fours, which lie close over each other. *Juniperus Bermudiana*. H. L. Cedar of Bermudas.

6. *JUNIPERUS foliis ternis patentibus, subulatis, acutis*. Juniper with Awl-shaped acute Leaves placed by Threes, which spread open. *Juniperus major baccâ caeruleâ*. C. B. P. Greater Juniper with blue Berries.

7. *JUNIPERUS foliis inferioribus ternis brevioribus patentibus, superioribus imbricatis acutis*. Juniper with under Leaves placed by Threes, which are shorter and spread open, the upper ones sharp pointed, and lying over each other. *Cedrus folio cupressi major, fructu flavescente*. C. B. P. Greater Cedar with a Cypress Leaf and yellowish Fruit.

8. *JUNIPERUS foliis undique imbricatis ovatis obtusis*. Flor. Leyd. 90. Juniper with oval blunt Leaves, which every where lie over each other. *Cedrus folio cupressi media, majoribus baccis*. C. B. P. 488. Middle Cedar, with a Cypress Leaf and larger Berries.

9. *JUNIPERUS foliis omnibus quadrifariam imbricatis*. Juniper with all the Leaves placed by Fours, and lying over each other. *Juniperus maxima cupressi folio minimo, cortice exteriore in tenues philyras spirales ductiles*. Sloan. Cat. Jam. 128. Greatest Juniper with the least Cypress Leaf, and the outer Bark splitting off in thin

ductile Pieces, commonly called Jamaica Berry-bearing Cedar.

10. *JUNIPERUS foliis oppositis erectis decurrentibus, ramis patulis*. Juniper with opposite, erect, running Leaves, and spreading Branches. *Sabina folio tamarisci*. C. B. P. 487. Savin with a Tamarisk Leaf, or common Savin.

11. *JUNIPERUS foliis oppositis patulis decurrentibus, ramis erectioribus*. Juniper with opposite spreading Leaves which run into each other, and more erect Branches. *Sabina folio cupressi*. C. B. P. 487. Savin with a Cypress Leaf, commonly called Berry-bearing Savin.

12. *JUNIPERUS foliis undique imbricatis obtusis, ramis teretibus*. Juniper with obtuse Leaves every-where lying over each other, and taper Branches. *Juniperus major, baccâ rufescente*. C. B. P. 489. Greater Juniper with a brownish Berry.

13. *JUNIPERUS foliis quadrifariam imbricatis acutis*. Prod. Leyd. 90. Juniper with acute Leaves lying over each other, and placed four Ways. *Cedrus Hispanica procerior, fructu maximo nigro*. Tourn. Inst. 588. Taller Spanish Cedar, with a very large black Fruit.

The 1st Sort grows naturally upon chalky Lands, in many Parts of England. This is a low Shrub, seldom rising more than 3 Feet high, sending out many spreading Branches on every Side, covered with a brown Bark, and garnished with narrow Awl-shaped Leaves ending in acute Points, which are placed by Threes round the Branches, pointing outward; these are of a grayish Colour, and continue through the Year; the male Flowers sometimes are situated on the same Plant with the female, but at Distances; at other Times they are upon distinct Plants: The female Flowers are succeeded by roundish Berries which are first green, but when ripe, are of a dark purple Colour. The Berries ripen in Autumn.

The Wood, the Berries, and the Gum, are used in Medicine; the Gum is titled Sandaracha.

The 2d Sort is known in the Gardens by the Title of Swedish Juniper: this is by many supposed to be only a Variety of the first, but is undoubtedly a distinct Species, for I have many Years raised both Sorts from the Seeds, and have never found them alter. This Sort rises to the Height of 10 or 12 Feet, the Branches grow more erect, the Leaves are narrower, and end in more acute Points; they are placed farther asunder on the Branches, and the Berries are larger. It grows naturally in Sweden, Denmark, and Norway.

The 3d Sort grows naturally in most Parts of North America, where it is called red Cedar, to distinguish it from a Sort of Cypress, which is called white Cedar there. Of this there are two, if not three Varieties, besides the Species here enumerated; one of which has Leaves in every Part, like those of the Savin, and upon being rubbed, emit a very strong ungrateful Odour: This is commonly distinguished in America, by the Title of Savin Tree. There is another with Leaves very like those of the Cypress, but as these generally arise from the same Seeds when they are sent from America, so they may be supposed to be only seminal Variations.

The lower Leaves of the 4th Sort are like those of

of the *Swedish* Juniper, but the upper Leaves are like those of the Cypress; and this Difference is constant, if the Seeds are carefully gathered from the same Tree; but as most of those People who send over these Seeds, are not very careful to distinguish the Difference, so it often happens that the Seeds of 2 or 3 Sorts are mixed together, which has given Occasion to People to imagine them but one Sort; but all the Leaves of the third are like those of the Juniper, so the Gardeners call this the red *Virginia* Cedar; and the fourth they call *Carolina* Cedar, though all the Sorts grow naturally in *Virginia*.

The 5th Sort is the *Bermudas* Cedar, whose Wood has a very strong Odour, and was formerly in great Esteem for wainscoting Rooms, and for Furniture; but the Odour being too powerful for many Persons, has rendered it less valuable, and at present there is not much of it imported into *England*. These Plants, while young, have acute-pointed Leaves which spread open, and are placed by Threes round the Branches; but as the Trees advance, their Leaves alter, and the Branches are four cornered; the Leaves are very short, and placed by Fours round the Branches, lying over each other like the Scales of Fish; the Berries are produced toward the End of the Branches, these are of a dark red Colour inclining to purple. As there are few of these Trees of any great Size in *England*, I have not had an Opportunity of examining their Flowers, therefore do not know if they have male and female Flowers on the same Plant, or if they are on different Plants; for although I have received very fine Specimens from *Bermudas*, yet they are all with Fruit on them almost fully grown, and not one with male Flowers; and as these Trees are commonly destroyed in *England* whenever there happens a severe Winter, we have little Hopes of seeing them in flower here.

The 6th Sort grows naturally in *Istria*, from whence I received the Berries, which have succeeded with me in the *Chelsea* Garden. This hath spreading Branches growing thinly, garnished with Awl-shaped, acute-pointed Leaves, placed by Threes round the Branches; they are of a dark green, and not very close to each other; they grow horizontally, pointing outward; the Berries are much larger than those of the common Juniper, and are blue when ripe.

The 7th Sort grows naturally in *Portugal*, from whence I have frequently received the Berries. This Sort grows with its Branches in a pyramidal Form, the lower ones are garnished with short, acute-pointed, grayish Leaves, placed by Threes round the Branches, pointing outward; but those on the upper Branches are of a dark green, lying over each other like the Scales of Fish, but end in acute Points. The male Flowers are produced at the Extremity of the Branches, they are situated in a loose, scaly, conical Katkin, standing on a short Foot Stalk erect; the Fruit is produced sometimes upon the same Tree, at Distances from the Flowers, and at other Times they are upon separate Trees; the Berries of this are of a pale yellow when ripe, and about the Size of those of the common Juniper.

The 8th Sort grows naturally in *Spain* and *Italy*; from both which Countries I have received it. The Branches of this Sort grow erect, and are covered with

a reddish brown Bark; the Leaves are small, obtuse, and lie over each other like the Scales of Fish; the male Flowers grow at the Extremity of the Branches in a conical Katkin, and the Fruit grows single from the Side of the Branches below the Katkins, on the same Branch; the Berries are large, oval, and, when ripe, are brown.

The 9th Sort grows naturally in *Jamaica*, and also in the other Islands of the *West-Indies*, where it rises to be one of the largest Timber Trees in those Countries; the Wood is frequently brought from thence by the Inhabitants of *North America*, for building Ships. This Sort is generally confounded with the *Bermudas* Cedar, and taken for the same, but the Specimens of it which were sent me by the late Dr. *Houssoun*, prove them to be different Trees; for the Branches of this spread very wide, the Leaves are extremely small, and are every where lying *imbricatum* over each other; the Bark is rugged, and splits off in Strings, and is of a very dark Colour; the Berries are smaller than those of the *Bermudas* Cedar, and are of a light brown Colour when ripe: This Sort is male and female in different Trees.

The 10th Sort is the common Savin; this grows naturally in *Italy*, *Spain*, and the *Levant*, upon the Mountains where it is cold. It sends out its Branches horizontally, so seldom rises more than 3 or 4 Feet high, but spreads to a considerable Distance every Way; the Branches are garnished with very short, acute-pointed Leaves placed opposite, which run into each other along the Branch, and their Ends point upward. This Sort very rarely produces either Flower or Seed in the Gardens; I have frequently examined old Plants which have been standing more than 50 Years, and have not more than 3 Times found any male Flowers upon them, and but once have seen any Berries, which were upon a separate Tree from the Flowers; these Berries were smaller than those of the common Juniper, but of the same Colour, and were a little compressed; the whole Plant has a very rank strong Odour when touched. The Leaves of this Shrub are much used by the Farriers for Horses when they have Worms, and Mr. Ray commends the Juice of it mixed with Milk, and sweetened with Sugar, as an excellent Medicine for Children troubled with Worms. The Leaves beaten into a Cataplasm with Hog's Lard, will cure Children's scabby Heads.

The 11th Sort has, by many, been supposed to be only an accidental Variety of the former, but there is a manifest Difference between them; for the Branches of this grow more erect than those of the 11th Sort, the Leaves are shorter, and end in acute Points which spread outward. This Sort will rise to the Height of 7 or 8 Feet, and produces great Quantities of Berries. I have propagated this Sort from Seeds, but have never found it vary. It has been distinguished by most of the old Botanists, by the Title of Berry-bearing Savin. It grows naturally on the *Alps*, from whence I have received the Berries.

The 12th Sort grows naturally in *Spain*, *Portugal*, and the South of *France*, where it rises 10 or 12 Feet high, sending out Branches the whole Length of the Stem, garnished with small obtuse Leaves, lying over each other like the Scales of Fish; the Branches are

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small and taper, having no Angles or Corners, as most of the others have; the male Flowers are situated at the End of the Branches in conical scaly Katkins, and the Berries grow below from the Side of the same Branches. These are larger than those of the common Juniper, and when ripe are brown.

The 13th Sort grows naturally in *Spain* and *Portugal*, where it rises from 25 to 30 Feet high, sending out many Branches which form a Sort of Pyramid; the Branches are garnished with acute-pointed Leaves which lie over each other four Ways, so as to make the Branches four cornered; the Berries of this Sort are very large, and black when ripe.

These Plants are all propagated by sowing their Seeds, the best Season for which is as soon as they are ripe, if they can then be procured; for when they are kept until Spring before they are sown, they will not come up until the second Year. The Ground in which the Seeds of the hardy Sorts are sown, should be fresh and light, but it should not be dunged: It should be well dug and levelled very even, then sow your Seeds thereon pretty thick, and lift some Earth over them about half an Inch thick; this Bed will require no farther Care than to keep it clear from Weeds, and toward the Middle or latter End of *April*, you will find some of your Plants appear above Ground, though, perhaps, the greatest Part of them may lie till the Spring following before they come up; therefore you should carefully clear the Beds from Weeds, and in very dry Weather, refresh them with some Water, which will greatly promote the Growth of those Plants which are up, and also cause the other Seeds to vegetate; but if the Bed in which these Seeds are sown, is much exposed to the Sun, it should be shaded with Mats in the Day; for when the Plants come first up, they will not bear too much Heat. In this Bed they should remain till the second Autumn, when you must prepare some Beds to transplant them into, which should also be of light fresh undunged Soil; and having well dug and cleansed the Ground from all noxious Weeds and Roots, you should make them level; then in the Beginning of *October*, which is the proper Season for removing these Plants, you should raise up the young ones with a Trowel, preserving as much Earth as possible to their Roots, and plant them into the Beds about 5 or 6 Inches asunder each Way, giving them some Water to settle the Earth to their Roots; and if it should prove very dry Weather, you may lay a little Mulch upon the Surface of the Ground round their Roots, which will be of great Service to the Plants. But as many of the Seeds will be yet in the Ground, so the Beds should not be disturbed too much in taking up the Plants; for I have known a Bed sown with these Berries, which has supplied Plants for three Years drawing, some of the Berries having lain so long in the Ground before they sprouted; therefore the Surface of the Beds should be kept level, and constantly clean from Weeds.

The Plants may remain 2 Years in these Beds, observing to keep them clear from Weeds; and in the Spring you should stir the Ground gently between them, that their Roots may with greater Ease strike into it; after which Time they should be transplanted, either into a Nursery, at the Distance of 3 Feet Row from

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Row, and 18 Inches asunder in the Rows, or into the Places where they are to remain for good. The best Season to transplant them (as I before observed) is in the Beginning of *October*, when you should take them up carefully, to preserve a Ball of Earth to their Roots; and when planted, their Roots should be mulched; all which, if carefully attended to, as also observing to refresh them with Water in very dry Weather, until they have taken new Root, will preserve them from the Danger of not growing; and they being extreme hardy in Respect to Cold, will defy the severest of our Winters to injure them, provided they are not planted in a moist or rich Soil.

In order to have these Trees aspire in Height, their under Branches should be taken off, especially where they are inclined to grow out strong; but they must not be kept too closely pruned, which would retard their Growth; for all these ever-green Trees do more or less abound with a resinous Juice, which in hot Weather is very apt to flow out from such Places as are wounded; so that it will not be advisable to take off too many Branches at once, which would make so many Wounds from which their Sap in hot Weather would flow in such Plenty, as to render the Trees weak and unhealthy.

The two Sorts of *Virginian Cedars* grow to a much greater Height than the former, and in their native Country afford excellent Timber for many Uses; but with us there are very few which are above 20 or 25 Feet high, though there is no Doubt of their growing larger; for they thrive very fast after the three first Years, and resist the sharpest Frost of our Climate exceeding well, and are very apt to grow strait and regular, provided they are not suffered to shoot out too much at the Bottom.

These Plants are also propagated by Seeds, which must be procured from *Virginia* or *Carolina* (for they rarely produce ripe Seeds in *England*), and sown as was directed for the other Junipers; but as this Seed cannot be procured in *England* till Spring, so when sown at that Season, it remains in the Ground until the succeeding Spring before the Plants appear; therefore you must observe to keep the Beds clear from Weeds, and not suffer the Seeds to be disturbed, which is often the Fault of some impatient People, who think, because the Plants do not rise the first Year, that they will never come up, and so dig up the Ground again, whereby their Seeds are buried; but if they are let remain, they seldom fail to grow, though sometimes it is 2 Years after sowing before they come up. When the Plants are come up, they must be carefully weeded, and in dry Weather should be refreshed with Water, which will greatly forward their Growth; and the Autumn following they should have a little rotten Tan laid between them to keep out the Frost. In this Bed the Plants may remain till they have had 2 Years Growth, then they should be transplanted into other Beds, as was directed before for the other Sorts, observing to preserve a Ball of Earth to their Roots; and after they are planted, if the Season be dry, they must be carefully watered, and the Surface of the Ground covered with Mulch, to prevent the Sun and Wind from entering the Earth, to dry their Fibres; but they should not be

be too much watered, which often proves injurious to these Trees, by rotting their tender Fibres soon after they are emitted, whereby the Plants have been often destroyed.

In these Beds they may remain 2 Years, observing to keep them clear from Weeds; and in Winter you should lay a little fresh Mulch on the Surface of the Ground round their Roots, which will prevent the Frost from penetrating to them, and effectually preserve them; for while the Plants are so young, they are liable to be injured by hard Frosts, when too much exposed thereto; but when they have attained a greater Strength, they will resist the severest of our Cold.

After 2 Years, they should either be removed into a Nursery (as was directed for the common Juniper) or transplanted where they are designed to remain; observing always to take them up carefully, otherwise they are subject to fail upon transplanting; as also to mulch the Ground, and water them as was before directed, until they have taken Root; after which they will require no farther Care, than only to keep the Ground clear about their Roots, and to prune up their Side Branches to make them aspire in Height.

The Soil in which you plant these Trees, should be fresh and light, but must not be dunged, especially at the Time when they are planted; for Dung is very hurtful to them, if it be not quite rotted to Mould; therefore the Mulch which is laid upon the Surface of the Ground, should not be Dung, but rather some old Tanners Bark or Sea Coal Ashes, which will prevent the Frost from penetrating deep in the Ground.

These Trees being thus managed, will in a few Years rise to a considerable Stature, and by the Variety of their ever green Leaves and Manner of Growth, will greatly add to the Beauty of all Plantations, if rightly disposed, which indeed is what we seldom observe in any of the *English* Gardens or Wildernesses; for there are few People who consider the different Growths of the several Trees with which they compose such Plantations, so as to place the tallest growing Trees the backwardest from Sight, and the next Degree to succeed them, and so gradually diminishing till we come to the common Juniper, and others of the same Growth, whereby all the Trees will be seen, and the gradual Declivity of their Tops will appear like a verdant Slope, and be much more agreeable to the Sight, as also more advantageous to the Growth of the Trees, than to place Shrubs of humble Growth near such Plants as will grow to the first Magnitude, whereby the Shrub is hid from Sight, and will be over-shadowed and destroyed; nor can the Distance which each Tree requires, be so justly proportioned any other Way; for in this Distribution, the largest Trees being separated by themselves, may be planted at a due Distance; and then those of a middling Growth succeeding, may be accordingly allowed sufficient Room; and the smaller, which are next the Sight, being placed much closer, will hide the naked Stems of the larger Trees, and have an agreeable Effect to the Sight.

The Timber of these Trees is of excellent Use in *America*, for building Vessels, wainscoting Houses, and making many Sorts of Utensils, it abounding with a bitter Resin, which prevents its being destroyed by Ver-

min, but it is very brittle, and so not proper for stubborn Uses; but however, by encreasing the Number of our Timber Trees, we shall find many Advantages, besides the Pleasure their Variety affords; for we may hereby have Trees of very different Kinds, adapted to grow in various Soils and Situations, whereby we shall never want proper Trees for all the different Sorts of Soils in *England*, if proper Care be taken in their Choice; which would be a great Improvement to many Parts of this Kingdom, which now lie unplanted, because the Owner, perhaps, finds that neither Oaks nor Elms will thrive there, and so consequently concludes, that no other Sort will, which is a great Mistake; for if we consider how different the Structure of Trees is, and only observe what Sorts are adapted for growing on dry barren Mountains, and what are designed for the lower and richer Valleys, we need never be at a Loss for proper Trees for all Sorts of Ground.

The *Bermudas* Cedar being a Native of that Island, and also of the *Babama Islands*, is much tenderer than either of the former Sorts, so is not likely to thrive well in this Country; for although many of these Plants have lived several Years in the open Air in *England*, yet whenever a severe Winter happens, it either kills them, or so much defaces them, that they do not recover their Verdure in a Year or two after.

These Plants are propagated by Seeds as the former, with only this Difference, that these should be sown in Pots or Tubs of Earth, that they may be removed into Shelter in the Winter Time, otherwise the young Plants are often hurt by hard Frosts; but they will require no more Care than only to be placed under a common hot Bed Frame, where the Glasses may be constantly kept off in mild Weather, when they cannot have too much free Air, and only covered in hard Frosts. These Seeds constantly remain in the Ground until the second Year before they come up, therefore the Earth in the Pots should not be disturbed; and in the Summer Time they should be placed in the Shade, to prevent the Earth from drying too fast; and in very dry Weather they should be often watered, but do not give too much Water to them at once, which would rot the Seeds.

The Spring following, when the young Plants come up, they must be carefully cleared from Weeds, and in dry Weather refreshed with Water; but should stand during the Summer Season, in a Place defended from strong Winds; and in Winter must be placed under Frames, where they may be covered in hard frosty Weather, but must have open Air when the Weather is mild. In *April* following you should transplant them each into a single Halfpenny Pot filled with fresh light Earth, being careful to raise them up with a Ball of Earth to their Roots; and when they are planted, you should water them, to settle the Earth to their Roots; then place the Pots in a warm Situation, where they may be defended from Sun and Wind: But if you will bestow a moderate hot Bed to plunge the Pots upon, it will greatly promote their taking new Root; however, you must carefully defend them from the great Heat of the Sun, which is injurious to them when fresh removed; but when they have taken new Root, you may expose them by Degrees to the open Air. If you suffer

the Pots to remain plunged all the Summer, it will preserve the Earth therein from drying so fast as it would do, if they were set upon the Ground.

In *October* you should again remove these Plants into Shelter, or else plunge their Pots into the Ground under a warm Hedge, where they may be protected from the cold North and East Winds; and in the Spring following you must shift the Plants into Pots a Size larger, taking away some of the Earth from the Outside of the Ball, and adding some fresh, which will promote their Growth; and so continue to manage them as was before directed, until you plant them out in the Places where they are designed to remain; which should not be done till they are 3 or 4 Years old, by which Time they will be strong enough to bear the Cold of our common Winters.

The Reason for my directing these Plants to be preserved in Pots until they are planted out for good, is, because they are difficult to transplant; and being tender, will require some Shelter while young; and whoever observes the Method here laid down, will find the Plants so managed to gain two Years Growth in six, from those raised in the open Air, and be in less Danger of being destroyed; and as the Trouble and Expence in raising them this Way is not great, it is worth practising, since in a few Years the Trees will recompense the Trouble.

The Timber of this Tree is of a reddish Colour, and very sweet, and is commonly known in *England* by the Name of Cedar Wood, though there are divers Sorts of Wood called by that Name, which come from very different Trees, especially in the *West-Indies*, where there are several Trees of vastly different Appearances and Genera, which have that Appellation; it is this Wood which is used for Pencils, as also to wainscot Rooms, and make Stair Cases, it enduring longer sound, than most other Sorts of Timber, which, perhaps, may be owing to some extreme bitter Taste in the Resin, with which the Tree abounds, for it is very remarkable, that the Worms do not eat the Bottoms of the Vessels built with this Wood, as they do those built with Oak, so that the Vessels built with Cedar are much preferable to those built with any other Sort of Timber, for the Use of the *West-India* Seas, but they are not fit for Ships of War, the Wood being so brittle as to split to Pieces with a Cannon Ball.

The *Jamaica* Juniper is more impatient of Cold than the *Bermudas*, so will not live through the Winter in the open Air in *England*, and the Plants must be preserved in Pots, and housed in the Winter; this is propagated by Seeds, as the *Bermudas* Cedar, but if the Pots are plunged into a moderate hot Bed the second Spring after the Seeds are sown, it will bring up the Plants sooner, and they will have more Time to get Strength before Winter.

All the other Sorts are hardy enough to live in the open Air, so are very well worth propagating, as they will add to the Variety of ever-green Plantations, some of the Sorts will rise to a very considerable Height, so may prove to be useful Timber, and may be adapted to such Soils as will not suit many other Trees.

The common Savin should not be neglected, because it is so very hardy as never to be injured by the severest

Frost; and as this spreads its Branches near the Ground, if the Plants are placed on the Borders of Woods, they will have a good Effect in Winter, by screening the Nakedness of the Ground from Sight.

All these Sorts are propagated by their Seeds, which may be sown as the common Juniper, and the Plants afterward so managed, and most of the Sorts may be propagated by Cuttings, which, if planted in Autumn, in a shady Border, will take Root; but those Plants raised from Cuttings, will never grow so upright, nor to so large a Size as the Plants raised from Seeds, so that when they can be procured, it is much the better Method, but the other is frequently practised on those Sorts which do not perfect their Seeds in *England*.

As several of these Sorts grow to the Height of 18 or 20 Feet, the procuring as many of the Sorts as can be gotten from the Countries of their Growth, will be adding to the Variety of our ever-green Plantations, which cannot be too much propagated in *England*, where, in general, our Winters are temperate enough for them to thrive to Advantage; and as the Sorts, which are a little more tender than the others, obtain Strength, they will be in less Danger of suffering by severe Winters, as we find by many other Plants, which were so tender as not to live in the open Air at first, but now defy the severest Cold of our Climate.

JUSSIEA. *Lin. Gen. Pl.* 478.

The Characters are,

It hath a small permanent Empalement, divided into 5 Parts at the Top, sitting on the Germen. The Flower has 5 roundish spreading Petals, and 10 short slender Stamina, terminated by roundish Summits. The oblong Germen supports a slender Style, crowned by a flat Stigma, marked with 5 Stripes. The Germen becomes a thick oblong Capsule, crowned by the Empalement, which opens Lengthways, and is filled with small Seeds.

The Species are,

1. *JUSSIEA erecta villosa, floribus tetrapetalis, octandriis, pedunculatis.* *Lin. Sp. Pl.* 388. Upright hairy *Jussiea*, with Flowers standing on Foot Stalks, having 4 Petals and 8 Stamina. *Lyfimachia Indica non papposa, flore lutea minimo, siliquis Caryophyllum Aromaticum emulantibus.* *H. L.* 396. Indian Primrose with a very small yellow Flower, and Pods resembling Cloves.

2. *JUSSIEA villosa, caule erecto ramoso, floribus pentapetalis, decandriis sessilibus.* Hairy *Jussiea* with an erect branching Stalk, Flowers having 5 Petals, and 10 Stamina, which sit close to the Stalk. *Lyfimachia lutea erecta, non papposa major, foliis hirsutis, fructu caryophylloide.* *Sloan. Cat. Jam.* 85. Yellow upright larger Tree Primrose with hairy Leaves, and a Fruit like Cloves.

3. *JUSSIEA erecta glabra, floribus tetrapetalis octandriis sessilibus.* *Flor. Zeyl.* 170. Smooth upright *Jussiea*, with 4 Petals, and 8 Stamina to the Flowers, which sit close to the Stalk. *Lyfimachia lutea non papposa, erecta, foliis glabris, fructu caryophylloide.* *Sloan. Cat. Jam.* 85. Yellow upright Tree Primrose with smooth Leaves, and a Fruit like Cloves.

4. *JUSSIEA caule erecto ramoso glabra, floribus tetrapetalis octandriis sessilibus, foliis lanceolatis.* *Jussiea* with an upright branching smooth Stalk, Flowers having 4 Petals, and 8 Stamina sitting close to the Stalk, and

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Spear-shaped Leaves. *Onagra foliis persicariae amplioribus, parvis flore luteo.* Plum. Cat. 7. Tree Primrose with a large Arlesmart Leaf, and a small yellow Flower.

5. *JUSSIEA caule erecto simplici hirsuto, foliis lanceolatis, floribus pentapetalis decandriis sessilibus.* *Jussiea* with a single upright hairy Stalk, Spear-shaped Leaves, and crowned with Flowers, which have 5 Petals, and 10 Stamina sitting close to the Stalk. *Onagra erecta, caule rubro hirsuto, foliis oblongis, flore magno luteo.* Houst. Mss. Upright Primrose with a hairy Leaf of a reddish Colour, oblong Leaves, and a large yellow Flower.

The 1st Sort grows naturally at *Campeachy*, from whence the Seeds were sent me by the late Mr. *Robert Millar*; this rises with a shrubby Stalk, near 3 Feet high, sending out several Side Branches, garnished with oblong hairy Leaves, placed alternate. The Flowers come out from the Side of the Stalks singly, having short Foot Stalks; they have 4 small yellow Petals, with 8 Stamina; these sit upon the Germen which afterward becomes an oblong Seed Vessel, crowned by the four-leaved Empalement, and has a great Resemblance to the Cloves. This Plant flowers in *July* and *August*, and the Seeds ripen in *October*.

The 2d Sort grows naturally in *Jamaica*. The Seeds of this were sent me by the late Dr. *Houssoun*; this rises with a hairy branching Stalk, 2 Feet high, and is garnished with narrow Spear-shaped Leaves, placed alternate. The Flowers come out toward the End of the Branches singly from the Wings of the Leaves, sitting close to the Stalk; they are composed of 5 pretty large yellow Petals, and 10 Stamina; these sit upon a long Germen, which afterward becomes the Seed Vessel, crowned by the Empalement; these are filled with small Seeds. It flowers and Seeds about the same Time with the last.

The 3d Sort grows naturally in *Jamaica*, from whence the Seeds were sent me with those of the former Sort; this rises with a smooth erect Stalk, 3 Feet high, garnished with long, narrow, smooth, Spear-shaped Leaves. The Flowers are large and yellow, sitting close to the Stalk; these are succeeded by long Seed Vessels, shaped like those of the other Sorts. It flowers and seeds at the same Time with the former.

The 4th Sort was sent me from *Cartagena* by the late Dr. *Houssoun*; this hath a branching smooth Stalk, near 3 Feet high, garnished with Spear-shaped Leaves, standing on short Foot Stalks. The Flowers are small, yellow, and composed of 4 Petals, and 8 Stamina; these sit very close to the Stalk, and are succeeded by Seed Vessels shaped like those of the former Sorts.

The 5th Sort was sent me from *La Vera Cruz*, by the late Dr. *Houssoun*; this rises with single upright red Stalks 3 Feet high, which are hairy and channelled. The Leaves are Spear-shaped, and placed alternate on the Stalks, standing nearer together than in any of the other Sorts. The Flowers come out from the Wings of the Leaves, toward the Top of the Stalk; they are composed of 5 large yellow Petals, and 10 Stamina, sitting close to the Stalks, and are succeeded by Seed Vessels, 1 Inch long, and shaped like those of the former Sorts.

The 1st, 2d, and 4th Sorts are annual Plants, at least they are so in *England*; for if the Plants are raised early in the Spring, they will flower in *July*, and ripen their

Seed the Beginning of *October*; and those Plants raised later in the Spring, cannot be preserved through the Winter, though they are placed in a warm Stove, nor do their Stalks ever grow ligneous, or shew any Signs of their being perennial in their native Country.

The 3d and 5th Sorts have continued through the Winter in the Bark Stove, but those have been such Plants as did not flower and seed the first Year; for after they had perfected Seeds, the following Summer the Plants decayed.

All these Sorts are propagated by Seeds, which should be sown early in the Spring, in Pots filled with a gentle loamy Soil, and plunged into a moderate hot Bed; but as these Seeds often lie a whole Year in the Ground, before they vegetate, the Earth must be kept moist, and the Glasses of the hot Bed shaded in the Heat of the Day; by this Method the Seeds may be brought soon to vegetate; when the Plants come up, and are fit to remove, they should be each planted into a small separate Pot, filled with light loamy Earth, and plunged into a hot Bed of Tanners Bark, where they should be shaded from the Sun till they have taken new Root, after which they should have free Air admitted to them every Day, in Proportion to the Warmth of the Season; they must also be frequently refreshed with Water, but it must not be given to them in too great Plenty; when the Roots of the Plants have filled these small Pots, the Plants should be removed into others a Size larger; and if the Plants are too tall to stand under the Frames of the hot Bed, they should be removed into the Bark Stove, where they may remain to flower and perfect their Seeds, for when the Plants rise early in the Spring, and are brought forward in hot Beds, all the Sorts will flower and perfect their Seeds the same Year, which is better than to have them to keep through the Winter.

JUSTICIA. Houst. Nov. Gen. Lin. Gen. Pl. 26. *Ad-basoda.* Tourn. Inst. R. H. 175. Tab. 79. So named by the late Dr. *Houssoun*, in Honour of *James Justice*, Esq; a great Lover of Gardening and Botany.

The Characters are,

The Empalement of the Flower is small, and divided into 5 acute Segments at the Top. The Flower hath 1 Petal, divided into 2 Lips, almost to the Bottom, which are entire. The upper Lip is raised Archways, and the under is reflexed. It hath 2 Awl-shaped Stamina, situated under the upper Lip, terminated by erect Summits, bifid at their Base. It hath an oblong Germen, supporting a slender Style, longer than the Petal, crowned by a single Stigma. The Germen becomes an oblong Capsule with 2 Cells, divided by a Partition, which is contrary to the 2 Valves, which open with an Elasticity, and cast out the roundish Seeds.

The Species are,

1. *JUSTICIA foliis oblongo-ovatis hirsutis, sessilibus, floribus spicatis alaribus, caule fruticoso.* *Justicia* with oblong, oval, hairy Leaves, sitting close to the Stalks, and Flowers growing in Spikes proceeding from the Side of the Stalks, which are shrubby. *Justicia frutescens, floribus spicatis majoribus, uno versu dispositis.* Houst. Mss. Shrubby *Justicia* with larger Flowers growing in Spikes, ranged on one Side.

2. *JUSTICIA caule erecto ramoso hexangulari, foliis ovatis*

ovatis oppositis, bracteis cuneiformibus confertis. Justicia with an erect branching Stalk, having six Angles, oval Leaves placed opposite, and Wedge-shaped small Leaves (or Bractææ) growing in Clusters. *Justicia annua hexangulari caule, foliis Circææ conjugatis, flore miniato. Houst. Mss.* Annual *Justicia* with an hexangular Stalk, Enchanters Nightshade Leaves set by Pairs, and a Carmine Flower.

3. *JUSTICIA foliis ovato-lanceolatis, pediculatis, birtutis, bracteis cordatis acuminatis, caule fruticoso. Justicia* with oval Spear-shaped Leaves growing on Foot Stalks, Heart-shaped acute-pointed Bractææ, and a shrubby Stalk. *Justicia frutescens & birsuta, foliis oblongis pediculis longissimis, flore rubro. Houst. Mss.* Shrubby and hairy *Justicia* with oblong Leaves growing on very long Foot Stalks, and a red Flower.

4. *JUSTICIA arborea, foliis lanceolato-ovatis, bracteis ovatis persistentibus, corollarum galeâ concavâ. Flor. Zeyl. 16.* Tree *Justicia* with oval Spear-shaped Leaves, oval permanent Bractææ, and a concave Helmet to the Flower. *Adbatoda Zeylanensium. H. L. 742. Adbatoda* of Ceylon, commonly called Malabar Nut.

5. *JUSTICIA fruticosa, foliis lanceolatis integerrimis, pedunculis trifloris ancipitibus, bracteis calyce brevioribus. Lin. Sp. Pl. 15.* Shrubby *Justicia* with entire Spear-shaped Leaves, Foot Stalks having 3 Flowers looking different Ways, and a Bractæa shorter than the Empalement. *Adbatoda Indica, folio saligno, flore albo. Boerb. Ind. alt. 1. 239.* Indian *Adbatoda* with a Willow Leaf, and white Flower, commonly called Snap Tree.

6. *JUSTICIA spinosa, foliis oblongo-ovatis emarginatis, caule fruticoso ramoso. Prickly Justicia* with oblong oval Leaves, indented at their Edges, and a shrubby branching Stalk. *Adbatoda Antegoana, Lycii facie, spinosa. Petio.* Prickly *Adbatoda* of Antigua, with the Appearance of Boxthorn.

7. *JUSTICIA arborea, foliis lanceolato-ovatis sessilibus, subtus tomentosis, floribus spicatis congestis terminalibus. Tree Justicia* with Spear-shaped oval Leaves, woolly on their under Side, and sitting close to the Stalks, with Spikes of Flowers, growing in Clusters at the Ends of the Branches. *Adbatoda arborea, foliis oblongis, subtus villosis, floribus spicatis albis. Houst.* Tree *Adbatoda* with oblong Leaves, hairy on their under Side, and Spikes of white Flowers.

8. *JUSTICIA arborea, foliis lanceolato ovatis, bracteis ovatis deciduis mucronatis, corollarum galeâ reflexâ. Flor. Zeyl. 17.* Tree *Justicia* with Spear-shaped oval Leaves, oval pointed Bractææ, which fall off, and a reflexed Helmet to the Flowers. *Adbatoda spicâ longissimâ, flore reflexo. Burman. Zeyl. 7. Tab. 4, f. 1. Adbatoda* with a very long Spike, and a reflexed Flower.

The 1st Sort was discovered growing naturally at La Vera Cruz, by the late Dr. Housloun, who sent the Seeds to England; this rises with a shrubby brittle Stalk, 5 or 6 Feet high, sending out many Branches, garnished with oblong oval Leaves, 2 Inches long, and 1 broad, which are hairy, and placed by Pairs opposite; from the Wings of the Leaves come out the Spikes of Flowers, reflexed like a Scorpion's Tail. The Flowers are large, of a Carmine Colour, and ranged on one Side of the Spike; these are succeeded by short Pods about half an Inch long.

The 2d Sort was discovered by the same Gentleman, in the same Country; this is an annual Plant with an upright Stalk, having 6 Angles, which rises 2 or 3 Feet high, dividing into many Branches, garnished with oval Leaves placed opposite, an Inch and a Half long, and 1 Inch broad; they are smooth, as are also the Stalks. At each Joint come out Clusters of small Wedge-shaped Leaves, by Dr. Linnaeus termed Bractææ, and long before the Stalks decay, most of the larger Leaves fall off, and there are only these small Leaves remain. The Flowers are produced in small Spikes, at the End of the Branches, sitting very close among the Leaves; they are of a beautiful Carmine Colour, and have but one Petal, which has two Lips. The upper Lip is arched, bending over the lower, which is also a little reflexed, but both are entire. The Flowers are succeeded by short Wedge-shaped Capsules, opening Lengthways, inclosing 2 small oval Seeds.

The 3d Sort was discovered by the same Gentleman at Campeachy; this rises with a hairy shrubby Stalk, 4 or 5 Feet high, dividing into several Branches, garnished with oval, Spear-shaped, hairy Leaves, 4 Inches long, and 2 and a Half broad, standing on Foot Stalks, above an Inch long, placed by Pairs opposite. At the Base of the Foot Stalks come out a Cluster of small Heart-shaped Leaves, ending in acute Points, termed Bractææ. The Flowers come out in loose Clusters from the Wings of the Stalks, toward the End of the Branches; they are of a pale red Colour, and shaped like those of the former Sort.

These Plants are propagated by Seeds, which should be sown early in the Spring, in small Pots filled with fresh light Earth, and plunged into a moderate hot Bed of Tanners Bark, observing to water the Earth gently as it appears dry. The Seeds of these Plants frequently lie a Year in the Ground, so that the Pots must not be disturbed, if the Plants do not come up the same Year; but in the Winter should be kept in the Stove, and the Spring following plunged into a fresh hot Bed, which will bring up the Plants if the Seeds were good. When the Plants begin to appear, the Glasses of the hot Bed should be raised every Day, when the Weather is warm, to admit fresh Air to them. The Plants must also be frequently watered in warm Weather, but Water should not be given in large Quantities while the Plants are young, because they are then very tender, and subject to rot at the Bottom of their Stems, with much Moisture.

When the Plants are about 2 Inches high, they should be carefully taken up, and each transplanted into a separate small Pot filled with fresh light Earth, and then plunged into the hot Bed again, being careful to water and shade them until they have taken new Root, after which Time they should have Air admitted to them every Day, in Proportion to the Warmth of the Season, and they should be duly watered every other Day in hot Weather.

As the Plants advance in their Growth, they should be shifted into larger Pots, for if their Roots are too much confined, the Plants will not make any considerable Progress; but they should not be over potted, for that will be of worse Consequence than under potting them, because when they are planted in very large Pots, they will starve and decay, without producing any Flowers.

Flowers. They are too tender to endure the open Air in this Country, therefore they should always remain in the hot Bed, being careful to let them have a due Proportion of Air in hot Weather; and the annual Sort should be brought forward as fast as possible in the Spring, that the Plants may flower early, otherwise they will not produce good Seeds in *England*.

The 1st and 3d Sorts should remain in the hot Bed during the Summer Season (provided there be Room under the Glasses, without being scorched;) but at *Michaelmas* they should be removed into the Stove, and plunged into the Bark Bed, where they must remain during the Winter Season, observing to keep them warm, as also to water them gently once or twice a Week, according as they shall require. The following Summer these Plants will flower, and abide several Years, but they rarely produce good Seeds in *Europe*.

The 4th Sort grows naturally in the Island of *Ceylon*, but has been long in the *English* Gardens, where it is commonly known at present by the Title of *Malabar Nut*, but was formerly called *Beetle Nut*, and was by some supposed to be the Tree of which the *Chinese* chew the Leaves and Nuts; this, though a Native of so warm a Country, is hardly enough to live in a good Green-house in *England*, without any artificial Heat. It rises here with a strong woody Stalk, 12 or 14 Feet high, sending out many spreading Branches, garnished with Spear-shaped oval Leaves, 6 Inches long, and 3 broad, placed by Pairs opposite. The Flowers are produced on short Spikes at the End of the Branches, which are white, with some dark Spots; these appear in *July*, but are not succeeded by any Seeds in *England*.

This Sort may be propagated by Cuttings, which, if planted in Pots in *June* or *July*, and plunged into a very moderate hot Bed, will take Root, but they must be every Day screened from the Sun, and if the external Air is excluded from them, they will succeed better than when it is admitted to them. It may also be propagated by laying down their young Branches, which will take Root in the Ground; these young Plants should be put each into a separate Pot, filled with soft loamy Earth, and placed in the Shade till they have taken new Root, then they may be placed in a sheltered Situation during the Summer, but in Winter they must be housed, and treated as Orange Trees, with only this Difference, that these require more Water.

The 5th Sort grows naturally in *India*; this rises with a shrubby Stalk, from 3 to 4 Feet high, sending out Branches on every Side from the Bottom, so as to form a Kind of Pyramid; these are covered with a white Bark, and are garnished with Spear-shaped entire Leaves, near 2 Inches long, and one third of an Inch broad; they are smooth, stiff, and of a deep green, standing opposite. At the Base of the Foot Stalks come out Clusters of smaller Leaves of the same Shape and Texture. The Flowers come out upon short Foot Stalks from the Side of the Branches, each Foot Stalk supporting 1, 2, or 3 white Flowers, with long Empalements; these are succeeded by oblong Seed Vessels, which, when ripe, cast out their Seeds with an Elasticity, from whence it had the Title of Snap Tree.

This is propagated by Cuttings during any of the Summer Months; they should be planted in Pots filled with

light loamy Earth, and plunged into a hot Bed which has lost its great Heat, and shaded from the Sun, now and then gently refreshed with Water, and not too much Air admitted to them. In about 2 Months the Cuttings will have taken Root, then they must be gradually inured to bear the open Air, into which they should be removed, placing them in a sheltered Situation, where they may stay till Autumn; but if they get Root pretty early in the Summer, it will be proper to separate them each into a single small Pot, setting them in the Shade till they have taken new Root, after which they may be placed as before directed, but when it is late in the Season before they take Root, it will be better to let them remain in the same Pots till the following Spring. In Winter these Plants must be placed in a warm Green-house, or in a moderately warm Stove, for they are impatient of Cold and Damp, nor will they thrive in too much Warmth; they will often require Water in Winter, but during that Season it must be given them moderately; in Summer they must be removed into the open Air, but should have a warm sheltered Situation, and in warm Weather they must have Plenty of Water. This Plant flowers at different Seasons, but never produces Fruit here.

The 6th Sort grows naturally in *Jamaica*, from whence the late Dr. *Houssoun* sent it to *England*; this rises with many shrubby slender Stalks, about 5 Feet high, sending out Branches on every Side their whole Length, which grow erect, and are covered with a whitish Bark, garnished with small, oblong, oval Leaves, coming out two on each Side the Stalk opposite, and under the Leaves are placed at every Joint sharp Thorns like those of the *Berberry*; the Flowers come out singly from the Wings of the Leaves, they are small and of a pale red Colour, shaped like those of the other Sorts.

The 7th Sort was found by the late Dr. *Houssoun*, growing naturally at *Campeachy*. This rises with a strong woody Stem 20 Feet high, dividing into many crooked irregular Branches, covered with a light brown Bark, garnished with Spear-shaped oval Leaves, near 4 Inches long and 2 broad, covered with a soft Down on their under Side. The Flowers grow in Spikes from the End of the Branches, 3, 4, or 5 of these Spikes arising from the same Point, the middle Spike being near 3 Inches long, and the others about half that Length. The Flowers are small and white, but shaped like those of the other Species.

The 8th Sort grows naturally at *Malabar* and in *Ceylon*; this rises with a strong woody Stem 10 or 12 Feet high, dividing into many Branches, garnished with Spear-shaped oval Leaves 5 Inches long, and 2 and a Half broad, of a lucid green, and placed by Pairs opposite. The Flowers grow in very long Spikes from the End of the Branches, they are of a greenish Colour with a Shade of blue; the Helmet of the Flower is reflexed.

These 3 Sorts are propagated by Seeds, as the 3 first, and the Plants must be treated the same Way, especially while they are young; but afterward the 8th Sort may be more hardily treated, when they have gotten Strength. This Sort may also be propagated by Cuttings, as the 5th Sort; and when the Plants are 2 or 3 Years old, they will thrive in a moderate Degree of Warmth in Winter, and in the Summer they may be placed abroad

for 2 Months in the warmest Season of the Year, but they should have a warm sheltered Situation, and when the Nights begin to grow cold, they must be removed into the Stove; but they must have free Air admitted to them at all Times when the Weather is warm. The other 2 Sorts should constantly remain in the Bark Stove, and require the same Treatment as other tender Plants from the warmest Countries.

IXIA. Lin. Gen. Pl. 54. *Sisyrinchium*. Com. Hort. Amst.

The Characters are,

It hath oblong permanent Spathæ (or Sheaths) which inclose the Germen; the Flower has 6 oblong Spear-shaped Petals which are equal, and 3 Awl-shaped Stamina shorter than the Petals, situated at equal Distances, terminated by single Summits. It hath an oval 3 cornered Germen situated below the Flower, supporting a single Style the Length of the Stamina, crowned by a thick trifid Stigma; the Germen becomes an oval 3 cornered Capsule with 3 Cells, filled with roundish Seeds.

The Species are,

1. IXIA foliis ensiformibus, floribus remotis. Hort. Ups. 16. Ixia with Sword-shaped Leaves, and Flowers standing remote. Bermudiana iridis folio majori flore croceo, eleganter punctato. Kraus. Hort. 25. Tab. 25. Bermudiana with a larger Iris Leaf, and a Saffron coloured Flower, beautifully spotted.

2. IXIA floribus capitatis, spathis laceris. Lin. Sp. Pl. 36. Ixia with Flowers growing in Heads, and ragged Sheaths. Bermudiana Capensis, capitulis lanuginosis. Pet. Hort. Sicc. 242. Bermudiana from the Cape of Good Hope, with woolly Heads.

3. IXIA foliis gladiolatis, nervosis, hirsutis, floribus spicatis terminalibus. Icon. Tab. 155. Fig. 1. Ixia with Sword-shaped, hairy, veined Leaves, and Flowers growing in Spikes at the Ends of the Stalks.

4. IXIA foliis lineari-gladiolatis, floribus alaribus & terminalibus. Icon. Tab. 155. Fig. 2. Ixia with narrow Sword-shaped Leaves, and Flowers proceeding from the Sides and Tops of the Stalk.

5. IXIA foliis gladiolatis glabris, floribus corymbosis terminalibus. Icon. Tab. 156. Ixia with smooth Spear-shaped Leaves, and Flowers growing in a Corymbus terminating the Stalk. *Sisyrinchium Africanum majus, flore luteo maculâ notato*. Olden. Greater African *Sisyrinchium* with a yellow spotted Flower.

6. IXIA foliis lineari-gladiolatis, floribus alternis, caule bulbifero. Ixia with narrow Sword-shaped Leaves, Flowers placed alternate, and Stalks bearing Bulbs.

7. IXIA foliis gladiolatis, floribus distantibus. Ixia with Sword-shaped Leaves, and Flowers growing distant.

8. IXIA foliis lineari-gladiolatis, floribus spicatis sessilibus terminalibus. Ixia with narrow Sword-shaped Leaves, and sessile Flowers growing in Spikes at the Top of the Stalk.

The 1st Sort grows naturally in India, where the Stalks rise 5 or 6 Feet high, but in England they are seldom more than half that Height. It hath a pretty thick fleshy Root, divided in Knots or Joints of a yellowish Colour, sending out many Fibres; the Stalk is pretty thick, smooth, and jointed, garnished with Sword-shaped Leaves a Foot long and 1 Inch broad, with several longitudinal Furrows, and embracing the Stalks with their

Base, ending in acute Points; the upper Part of the Stalk divaricates into 2 smaller, with a Foot Stalk arising between them, which supports 1 Flower; the smaller Branches divaricate again in the same Manner into Foot Stalks, 2 Inches long, each sustaining 1 Flower. At each of these Joints is a Spatha or Sheath embracing the Stalk, which at the lower Joints are 3 Inches long, but the upper are not more than 1 Inch, ending in acute Points and permanent; the Flowers are composed of 6 Petals which are equal, they are of a yellow Colour within, and variegated with dark red Spots; the Outside is of an Orange Colour. These appear in July and August, and in warm Seasons are succeeded by the Seeds.

This Sort may be propagated either by Seeds, or parting the Roots: If by Seeds, they should be sown in Pots, and plunged into a moderate hot Bed, which will bring up the Plants much sooner, than when they are sown in the full Ground; when the Plants are fit to remove, they should be each planted in a small separate Pot filled with sandy Earth, and if they are placed under a Frame till they have taken good Root in the Pots, it will greatly forward their Growth; afterward they may be placed in the open Air in a sheltered Situation, where they may remain till Autumn, when they must be placed under a Frame to screen them from Frost; and in the Spring, most of the Plants may be turned out of the Pots and planted in a warm Border, where they will abide through the common Winters very well, but in severe Frosts they are often killed, unless they are covered with Tan, or other Covering to keep out the Frost, therefore a few of the Plants may be kept in Pots, and sheltered under a Frame in Winter.

The Stalks and Leaves of this Plant decay to the Root in Autumn, so that if the Surface of the Ground about the Roots is covered 2 or 3 Inches thick with Tan, it will secure them from the Danger of Frost; and in the Spring before the Roots shoot, will be the best Time to remove and part the Roots; but this should not be done oftener than every third Year, for when they are often parted, they will be weak, and will not flower so well.

The 2d Sort grows naturally at the Cape of Good Hope; this is a low Plant, which rises 3 or 4 Inches high; the Leaves are narrow and veined, the Flowers are small, growing in a downy Head on the Top of the Stalk, but they make little Appearance, so are only kept for Variety.

The 3d Sort I raised from Seeds, which were sent me from the Cape of Good Hope. This hath a round bulbous Root a little compressed, covered with a red Skin, from which arise 5 or 6 Sword-shaped Leaves about 3 or 4 Inches long, hairy, and with several longitudinal Furrows; these embrace each other at their Base, but spread asunder at the Top; between these come out the Flower Stalk, which rises 6 or 8 Inches high, is naked to the Top, and terminated by a Cluster of Flowers, each having a Spatha or Hood, which dries and is permanent; the Flowers are of a deep blue Colour, and appear in May; these are succeeded by roundish three cornered Seed Vessels with 3 Cells, filled with roundish Seeds which ripen in July, then the Leaves and Stalks decay.

The 4th Sort was raised from Seeds in the Chelsea Garden,

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Garden, which came with those of the former Sort. This hath a small round bulbous Root, from which arise 4 or 5 narrow long Sword-shaped Leaves 6 or 7 Inches long; between these come out a very slender round Stalk about 10 Inches long, from the Side of which there comes out 1 or 2 Clusters of Flowers, standing on short Foot Stalks, and at the Top of the Stalk, the Flowers grow in a loose Spike; they are of a pure white, and shaped like those of the other Species. These appear in May, and the Seeds ripen in July.

The Seeds of the 5th Sort were sent me from the *Cape of Good Hope*; this has an oval bulbous Root a little compressed, from which come up 3 or 4 narrow, thin, Sword-shaped Leaves, near a Foot long; the Flower Stalk rises a little above the Leaves, it is very slender, naked, and terminated by a round Cluster of Flowers, each having a Spatha or Hood; they are composed of 6 pretty large oblong Petals which are concave, and of a deep yellow Colour, each having a large black Spot at the Base. This flowers early in May, and the Seeds ripen the latter End of June.

The 6th Sort hath narrow Spear-shaped Leaves, about 6 or 7 Inches long; the Stalk rises near a Foot and a Half high, garnished with 1 Leaf at each of the lower Joints, of the same Shape with the other but smaller; these embrace the Stalk with their Base, and stand erect; the upper Part of the Stalk is adorned with Flowers composed of 6 oblong oval Petals of a Sulphur Colour, placed alternate on the Stalk, which is bent at each Joint where the Flowers stand; the Flowers have 3 short Stamina joined at their Base, terminated by long flat erect Summits; the Germen is situated under the Flower, supporting a long slender Style, crowned by a trifid Stigma; the Germen becomes a roundish Capsule with 3 Cells, filled with roundish small Seeds. The Stalks at each of the lower Joints thrust out small Bulbs, which, if planted, will grow and produce Flowers.

The 7th Sort hath shorter and broader Leaves than the former, the Stalk is slender and furrowed, and at each of the lower Joints is garnished with 1 Leaf of the same Shape, embracing the Stalk with their Base; the Flowers come out toward the Top of the Stalk, at 2 or 3 Inches Distance, each Stalk supporting 2 or 3 Sulphur-coloured Flowers, each composed of 6 Spear-shaped Petals an Inch and a Half long, equal in their Size and regular in Position; they have a short permanent Em-

palement, cut into 2 long and 2 shorter acute Segments; these are succeeded by round Capsules with 3 Cells, filled with round Seeds. This Sort flowers in March, and the Seeds ripen about 2 Months after.

The 8th Sort hath very small round bulbous Roots, from which arise 3 or 4 long, slender, Grass-like Leaves, of a dark green Colour and smooth; between these come out the Stalk, which is very slender and round, rising a Foot and a Half high; at the Top the Flowers are collected in a Spike sitting close to the Stalk, each having a thin, dry, permanent Spatha or Sheath, which covers the Capsule after the Flower is fallen. The Flowers are of a pure white, and shaped like those of the other Species, but smaller; they are succeeded by small round Seed Vessels with 3 Cells, each containing 2 or 3 round Seeds. It flowers the latter End of May, and the Seeds ripen in July.

There are some other Varieties of this Genus, which have flowered in the *Chelsea* Garden, differing only in the Colour of their Flowers, so are not supposed to be distinct Species; one of which is purple on the Outside, and white within; another has white Flowers, with a blue Stripe on the Outside of each Petal, and a third has white Flowers with yellow Bottoms. These have already flowered in the *Chelsea* Garden, where there are many more, which have been since raised from Seeds, whose Flowers have not as yet appeared; and at the *Cape of Good Hope*, where these Plants grow naturally, there are more than 30 Varieties mentioned in a Catalogue of Dr. Herman's. The Roots of most, if not all these Sorts, are frequently eaten by the Inhabitants at the *Cape of Good Hope*, who greatly esteem them.

All the Sorts multiply very fast by Offsets, so that when once obtained, there will be no Occasion to raise them from Seeds; for the Roots put out Offsets in great Plenty, most of which will flower the following Season, whereas those from Seeds are 3 or 4 Years before they flower. These Plants will not live through the Winter in the full Ground in *England*, so should be planted in small Pots filled with light Earth, and placed under a Frame in Winter, where they may be protected from Frost, but in mild Weather should enjoy the free Air; but during the Winter they must be guarded from Mice, who are very fond of these Roots, and if not prevented will devour them.

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K A L I. See *Salsola*.

K A L M I A. *Lin. Gen. Pl.* 582. *Chamaerhododendros*. *Tourn. Infl. R. H.* 604. *Tab.* 373.

The Characters are,

The Flower has a small permanent Empalement cut into 5 Parts, and 1 Petal cut into 5 Segments, which spread open and are roundish. It hath 10 Stamina the Length of the Petal, declining in the Middle, terminated by oval Summits. In the Center is situated a roundish Germen,

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supporting a slender Style as long as the Petal, crowned by an obtuse Stigma. The Germen becomes an oval or globular Capsule with 5 Cells, filled with very small Seeds.

The Species are,

1. *KALMIA foliis lanceolato-ovatis nitidis, subtus ferrugineis, floribus corymbosis terminalibus.* *Kalmia* with shining Spear-shaped oval Leaves, of an Iron Colour on their under Side, and Flowers growing in round Bunches at the Ends of the Branches. *Chamaerhododendros lauri*

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folio sempervirens, floribus bullatis corymbosis. Catesb. Car. p. 3, 17. Ever-green Rose Laurel with studded Flowers growing in a round Bunch, commonly called in America, Mountain Laurel.

2. *KALMIA foliis lanceolatis, corymbis terminalibus.* *Kalmia* with Spear-shaped Leaves, and Flowers growing in Bunches terminating the Branches. *Chamedaphne foliis tini, floribus bullatis umbellatis.* Catesb. Carol. 2. p. 98. Tab. 98. Dwarf Laurel with a *Tinus* Leaf, and studded Flowers growing in Umbels, commonly called Ivy Tree in America.

3. *KALMIA foliis lanceolatis corymbis lateralibus.* Lin. Gen. Nov. 1079. *Kalmia* with Spear-shaped Leaves, and Flowers growing in round Bunches on the Sides of the Stalk. *Chamedaphne sempervirens, foliis oblongis angustis, foliorum fasciculis oppositis.* Catesb. Carol. 3. p. 17. Ever-green Dwarf Laurel, with oblong narrow Leaves growing in Bunches, which are placed opposite.

The 1st Sort grows naturally on Rocks and in barren Soils, in *Virginia* and *Pensylvania*, where it rises with a branching Stalk of 15 or 16 Feet high, garnished with very stiff Leaves, 6 or 7 Inches long and 2 broad, of a lucid green on their upper Side, but when young are of a pale green on their under Side, and afterward as they are older, become of an Iron Colour; they have short thick Foot Stalks, and stand without Order round the Branches; and between these the Buds are formed for the next Year's Flowers, at the Extremity of the Branches; these Buds swell to a large Size during the Autumn and Spring Months, till the Beginning of June, when the Flowers burst out from their Empalements, forming a round Bunch (or Corymbus) sitting very close to the Branch; they are of a pale Blush Colour, changing afterward to white, the Outside of the Petal is of a Peach Colour. The Flower has but one Petal, whose Base is tubulous, but is deeply cut into 5 roundish Segments, one of which is studded with yellow, green, and purple Spots, which are prominent and hairy; after the Flowers are past, the Germen in the Center becomes an oval Capsule, crowned by the permanent Style, having 5 Cells, full of very small Seeds. This Shrub in its native Soil, continues flowering great Part of the Summer, and is one of the greatest Ornaments to the Country; but as yet it is not so well naturalized to our Climate as could be wished, though the Plants are not injured by the Cold, and some of them have flowered 3 Years past in the *Chelsea* Garden.

In the Country where this Shrub grows naturally, it sends out Plenty of Suckers from the Roots, so that they form Thickets almost impassable; but here they have not as yet produced any Suckers, nor do the Seeds come to Maturity, so that the Plants are not very common in *England*; for the Seeds sent from *America*, lie in the Ground a whole Year before the Plants appear, and afterward they make very slow Progress, which has discouraged most People from attempting to raise the Plants in that Method. The only Person who has succeeded well in raising them, is Mr. James Gordon of Mile End, who has a good Number of the Plants which have arisen from Seeds.

Dr. Linnaeus has ranged this Plant in his Genus of *Rhododendron*, but as the Flowers of this Plant spread open, and have as short Tubes as any of those in his Ge-

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nus of *Kalmia*, and answer in all the other Characters those of that Genus, it should be there placed.

The 2d Sort is a Native of the same Country with the first, where it rises from 6 to 12 Feet high, dividing into many ligneous Branches, very hard and close, covered with a dark gray Bark; they are generally crooked and irregular, but closely garnished with stiff Leaves about 3 Inches long and 1 broad, of a lucid green, and placed without Order upon the Branches, standing on slender Foot Stalks; the Flowers grow in loose Bunches at the End of the Branches, on long Foot Stalks; they are of 1 Petal, having a short Tube, but spread open at the Top, where it is cut into 5 Angles; the Flowers are of a bright red Colour when they first open, but afterward fade to a Blush or Peach Bloom Colour; these are succeeded by roundish compressed Seed Vessels crowned by the permanent Style, divided into 5 Cells, filled with small roundish Seeds. This Shrub flowers great Part of Summer in its native Country, but is not yet so well naturalized to this Country as to do the like; the only Place where I have seen this Shrub thrive well, is in the Gardens of his Grace the Duke of Argyle, at *Whitton* near *Hounslow*.

The Leaves of this elegant Plant are supposed to have a noxious Quality, destroying Sheep and Oxen when they feed upon them, yet the Deer eat them with Impunity.

The 3d Sort grows naturally in *Pensylvania*, where it rises 4 or 5 Feet high, but in *England* I have not seen any, more than half that Height; the finest Plants of this Kind which I have yet seen, are in the Gardens of his Grace the Duke of Argyle, before-mentioned.

The Leaves of this Sort are about 2 Inches long, and half an Inch broad in the Middle; they are stiff, of a lucid green, and stand opposite; sometimes they are by Pairs at each Joint, and at others there are four, 2 on each Side, standing on very short Foot Stalks; the Flowers come out in Clusters on every Side the Stalks; they are of a beautiful red Colour, and shaped like those of the 2d Sort, but smaller; they are succeeded by short roundish compressed Capsules with 5 Cells, crowned by the permanent Style, and filled with very small Seeds. This Shrub in its native Country continues flowering most Part of Summer, and those Plants at *Whitton* were in flower in the Beginning of July, when I was there, and the Beginning of October following I saw many fresh Flowers upon the same Shrubs.

Both these Sorts multiply by their creeping Roots in their native Soil, and at *Whitton* where they have stood unremoved a considerable Time, they put out Suckers in great Plenty; and as these Plants which come from Suckers, are much more likely to produce others than those raised from Seeds, and will flower much sooner, the Plants should not be removed, but encouraged to spread their Roots and send out Suckers.

KARATAS, the Penguin or wild Ananas.

The Characters are,

It hath a tubulous Bell-shaped Flower, divided into 3 Parts at the Mouth, from whose Calyx arises the Pointal, fixed like a Nail in the binder Part of the Flower, which afterward becomes a fleshy almost conical Fruit, divided by Membranes into 3 Cells, full of oblong Seeds.

There is but one Sort of this Plant at present known, which is,

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KARATAS foliis altissimis, angustissimis & aculeatis. Plum. Nov. Gen. The wild Ananas or Penguin.

Father Plumier has made a great Mistake in the Figure and Description of the Characters of this Plant, and the *Caraguata*; for he has joined the Flower of the *Caraguata* to the Fruit of the *Karatas*, and vice versa; and this has led many Persons into Mistakes, who have joined the *Bromelia* and *Ananas* to this, making them all of the same Genus, whereas by their Characters they should be separated.

This Plant is very common in the *West-Indies*, where the Juice of its Fruit is often put into Punch, being of a sharp acid Flavour. There is also a Wine made of the Juice of this Fruit which is very strong, but it will not keep good very long, so is only for present Use. This Wine is very intoxicating and heats the Blood, therefore should be drank very sparingly.

In *England* this Plant is preserved as a Curiosity, for the Fruit seldom arrives to any Degree of Perfection in this Country, though it has often produced Fruit in *England*; but if it were to ripen as thoroughly here as in its native Country, it would be little valued on Account of its great Austerity, which will often take the Skin off the Mouths and Throats of those People, who eat it incautiously.

This Plant is propagated by Seeds, for though there are often Suckers sent forth from the old Plants, they come out from between the Leaves, and are so long, slender, and ill-shapen, that if they are planted, they seldom make regular Plants. These Seeds should be sown early in Spring, in small Pots filled with light rich Earth, and plunged into a hot Bed of Tanners Bark. When the Plants are strong enough to transplant, they should be carefully taken up, each planted into a separate Pot filled with light rich Earth, and plunged into the hot Bed again, observing to refresh them frequently with Water, until they have taken new Root, after which Time they should have Air and Water in Proportion to the Warmth of the Season. In this Bed the Plants may remain till *Michaelmas*, at which Time they should be removed into the Stove, and plunged into the Bark Bed, where they should be treated as the *Ananas*.

These Plants will not produce their Fruit in *England* until they are 3 or 4 Years old, so they should be shifted into larger Pots, as the Plants advance in their Growth; for if their Roots are too much confined, they will make but little Progress. They should also be placed at a pretty great Distance from each other, for their Leaves will be 3 or 4 Feet long, which, turning downward, occupy a large Space.

The Leaves of this Plant are strongly armed with crooked Spines, which renders it very troublesome to shift or handle the Plants; for the Spines catch hold of whatever approaches them by their crooked Form, being some bent one Way, and others the reverse, so that they catch both Ways, and tear the Skin or Clothes of the Persons who handle them, where there is not the greatest Care taken of them.

The Fruit of this Plant is produced in Clusters, growing upon a Stalk about 3 Feet high, and having generally a Tuft of Leaves growing on the Top, has, at first Sight, the Appearance of a Pine Apple; but, when

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closer viewed, they will be found to be a Cluster of oblong Fruit, each being about the Size of a Finger.

A KATKIN is an Aggregate of Summits, hanging down in Form of a Rope, or Cat's Tail, as in the *Sal-low*, *Hazel*, *Birch*, &c. and is called in *Latin*, *Iulus*.

KOEMPFERIA. Lin. Gen. Pl. 7.

The Characters are,

It hath a single Spatba (or Sheath) of 1 Leaf; the Flower hath 1 Petal, with a long slender Tube, divided in 6 Parts above; 3 of them are alternately Spear-shaped and equal, the other are oval, and at Bottom cut into 2 Parts which are vertically Heart-shaped. It hath but 1 Stamen, which is membranaceous, oval, and indented, terminated by a linear Summit, fastened to it all the Length, scarcely emerging out of the Tube of the Petal. It hath a round Germen supporting a Style the Length of the Tube, crowned by an obtuse Stigma; the Germen becomes a roundish 3 cornered Capsule with 3 Cells, filled with Seeds.

We have but one Species of this Genus at present in *England*, viz.

KOEMPFERIA foliis ovatis sessilibus. Flor. Zeyl. 8. *Kæmpferia* with oval Leaves sitting close to the Root. *Katsjuli Kelengu*. Hort. Mal. and the *Wanbom*. *Kæmpf. Amæn.* 901. *Galangale*.

This Plant was titled by Dr. *Linnaeus*, from Dr. *Kæmpfer*, a German Physician, who travelled in *India* and *Persia*, and has published an Account of many curious Plants which he had observed in those Countries, and among them, he has given a Figure and Description of this, by the *Indian* Title *Wanbom*.

This Plant is a Native in the *East-Indies*, where the Root is greatly used in Medicine as a Sudorifick, and it is reckoned carminative. It hath much the Scent of green Ginger, when taken out of the Ground; the Roots are divided into several fleshy Tubers, which are sometimes jointed, and grow about 4 or 5 Inches long; the Leaves are oval, being about 4 Inches long, and 2 broad; these are without Foot Stalks, growing close to the Root, and seem as if set on by Pairs, spreading open each Way; and from between these Leaves the Flowers are produced singly, having no Foot Stalks, but are closely embraced by the Leaves; the Flowers are white, having a bright purple Bottom. These are not succeeded by any Fruit in *England*.

This Plant being a Native of hot Countries, will not bear the open Air in *England*, so requires a warm Stove to preserve it through the Winter; but as the Leaves decay in the Autumn, the Plants should not have too much Wet while they are in an unactive State. If these Plants are placed in the Bark Stove, and treated as the Ginger, they will thrive, and produce Plenty of Flowers every Summer. It is propagated by parting the Roots, the best Time for this is in Spring, just before they begin to put out their Leaves.

KETMIA. See Hibiscus.

KIGGELARIA. Lin. Gen. Pl. 1001. *Laurus*. Sterb. We have no *English* Title for this Plant. It was named by Dr. *Linnaeus*, in Honour of Dr. *Kiggeler*, who published a Catalogue of *Beaumont's* Garden in *Holland*.

The Characters are,

The male and female Flowers are situated on different Trees; the male Flowers have an Emplacement of 1 Leaf,

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cut into 5 concave Segments, and 5 concave Petals, shaped like a Pitcher; each of the Petals have a Honey Gland fastened to their Base, which have 3 obtuse Lobes and are coloured; they have 10 small Stamina, terminated by oblong Summits. The female Flowers have Empalements and Petals like the male, but no Stamina. In the Center is situated a roundish Germen, supporting 5 Styles, crowned by obtuse Stigmas. The Germen becomes a rough globular Fruit with a thick Cover, having 1 Cell, filled with angular Seeds.

We have but one Species of this Genus, viz.

KIGGELARIA Hort. Cliff. 462. fol. 29. This is the *Euonymo-affinis Æthiopica sempervirens, fructu globoso scabro, foliis salicis rigidis serratis*. H. L. 139. An *Æthiopian* ever-green Plant resembling the Spindle Tree, with a rough globular Fruit, and stiff sawed Willow Leaves.

This Plant grows naturally at the Cape of Good Hope, where it rises to be a Tree of middling Stature; but as it will not live in the open Air here, they cannot be expected to grow to a great Magnitude in England. There are Plants of it in the *Chelsea* Garden upward of 10 Feet high, with strong woody Stems and pretty large Heads; the Branches have a smooth Bark, which is first green, but afterward changes to a purplish Colour; the Leaves are about 3 Inches long and 1 broad, of a light green Colour, and sawed on their Edges, standing on short Foot Stalks alternately. The Flowers come out in Clusters from the Side of the Branches, and hang downward; they are of an herbaceous white Colour, and appear in May, at which Time the Plants are thinly garnished with Leaves, for most of the old Leaves drop just before the new ones appear. The male Flowers fall away soon after their Farina is shed, but the female Flowers are succeeded by globular Fruit about the Size of common red Cherries; the Cover of these is very rough, and of a thick Consistence, opening in 4 Parts at the Top; to each of these adhere many small angular Seeds. These Fruit have grown to their full Size in the *Chelsea* Garden, but the Seeds never came to Maturity.

These Plants are not very common in Europe, being very difficult to propagate; for when any of the young Branches are laid down, they are 2 Years before they put out Roots, and scarce one in five will then have any Roots; nor do the Cuttings succeed better, for not one in twenty of them will take Root, when planted with the utmost Care: The best Time to plant the Cuttings is in the Spring, just before the Plants begin to shoot; these should be planted in Pots filled with a soft loamy Earth, and plunged into a very moderate hot Bed, covering them close with a Glass, to exclude the Air from them, and shade them every Day from the Sun; they should have very little Water after their first planting. If any of them grow, they should be planted into separate small Pots, filled with loamy Earth, and may be exposed to the Air in a sheltered Situation till Autumn, when they must be removed into the Green-house, and treated as Orange Trees.

KITCHEN GARDEN. A good Kitchen Garden is almost as necessary to a Country Seat, as a Kitchen to the House; for without one, there is no Way of being supplied with a great Part of necessary Food, the Markets in the Country being but poorly furnished with ef-

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culent Herbs, and those only upon the Market Days, which are seldom oftener than once a Week; so that unless a Person has a Garden of his own, there will be no such Thing as procuring them fresh, in which their Goodness consists: nor can any Variety of these be had in the Country Markets, therefore whoever proposes to reside in the Country, should be careful to make Choice of a proper Spot of Ground for this Purpose; and the sooner that is made and planted, the Produce of it will be earlier in Perfection; for Fruit Trees and Asparagus require 3 Years to grow, before any Produce can be expected from them; so that the later the Garden is made, the longer it will be before a Supply of these Things can be had for the Table. And although the Usefulness of this Garden is acknowledged by almost every one, yet there are few who make a proper Choice of Soil and Situation for such a Garden; the modern Taste, which is, perhaps, carried to as extravagant Lengths, in laying open and throwing every Obstruction down, as the former Custom of inclosing within Walls was ridiculous; so that now one frequently sees the Kitchen Garden removed to a very great Distance from the House and Offices, which is attended with great Inconveniencies; and often situated on a very bad Soil, sometimes too moist, and at others without Water, so that there is a great Expence in building Walls and making the Garden, where there can be little Hopes of Success.

Nor will a Kitchen Garden be well attended to, when it is so situated as to be out of Sight of the Possessor, especially if the Gardener has not a Love and Value for it, or if it lies at a great Distance from his Habitation, or the other Parts of the Garden; for when it so happens, a great Part of the Labourer's Time will be lost in going from one Part to the other: Therefore, before the general Plan of the Pleasure Garden is settled, a proper Piece of Ground should be chosen for this Purpose, and the Plan so adapted, that the Kitchen Garden may not become offensive to the Sight, which may be effected by proper Plantations of Shrubs to screen the Walls; and through these Shrubs may be contrived some winding walks, which will have as good an Effect as those now commonly made in Gardens for Pleasure only. In the Choice of the Situation, if it does not obstruct the View of better Objects, or shut out any material Prospect, there can be no Objection to the placing it at a reasonable Distance from the House or Offices; for as particular Things may be wanted for the Kitchen, which were not thought of at the Time when Directions were given to the Gardener what to bring in, so if the Garden is situated at a great Distance from the House, it will be found very inconvenient to send thither as often as Things are wanting: Therefore it should be contrived as near the Stables as possible, for the Conveniency of carrying the Dung thither; which, if at a great Distance, will add to the Expence of the Garden.

As to the Figure of the Ground, that is of no great Moment, since in the Distribution of the Quarters all Irregularities may be hid; though if you are at full Liberty, an exact Square or an Oblong, is preferable to any other Figure.

The great thing to be considered is, to make Choice of a good Soil, not too wet nor over dry, but of a middling

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middling Quality; nor should it be too strong or stubborn, but of a pliable Nature, and easy to work; and if the Place where you intend to make the Kitchen Garden should not be level, but high in one part and low in another, I would by no Means advise the levelling it; for by this Situation you will have an Advantage which could not be obtained on a perfect Level, which is, the having one Part of dry Ground for early Crops, and the low Part for late Crops, whereby the Kitchen may be the better supplied throughout the Season with the various Sorts of Herbs, Roots, &c. And in very dry Seasons, when in the upper part of the Garden the Crops will greatly suffer with Drought, then the lower Part will succeed, and so *vice versa*; but I would by no Means direct the choosing a very low moist Spot of Ground for this Purpose; for although in such Soils Garden Herbs are commonly more vigorous and large in the Summer Season, yet they are seldom so well tasted or wholesome as those which grow upon a moderate Soil; and especially since in this Garden your choice Fruits should be planted, it would be wrong to have a very wet Soil.

This Garden should be fully exposed to the Sun, and by no means overshadowed with Trees, Buildings, &c. which are very injurious to your Kitchen Plants and Fruit Trees; but if it be defended from the North Wind by a distant Plantation, it will greatly preserve your early Crops in the Spring; as also from the strong South West Winds, which are very hurtful in Autumn to Fruit and Garden Herbs. But these Plantations should not be too near nor very large, for I have generally found where Kitchen Gardens are placed near Woods or large Plantations, they have been much more troubled with Blights in the Spring, than those which have been more exposed.

The Quantity of Ground necessary for a Kitchen Garden must be proportioned to the Largeness of the Family, or the Quantity of Herbs desired: For a small Family, one Acre of Ground may be sufficient; but for a large Family, there should not be less than three or four Acres; because, when the Ground is regularly laid out, and planted with Espaliers of Fruit Trees, as will hereafter be directed, this Quantity will be found little enough, notwithstanding what some Persons have said on this Head.

This Ground must be walled round, and if it can be conveniently contrived, so as to plant both Sides of the Walls which have good aspects, it will be a great Addition to the Quantity of Wall Fruit: And those Slips of Ground which are without Side of the Walls, will be very useful for planting Gooseberries, Currants, Strawberries, and some Sorts of Kitchen Plants, so that they may be rendered equally useful with any of the Quarters within the Walls; but these Slips should not be too narrow, lest the Hedge, Pale, or Plantation of Shrubs, which inclose them, should shade the Borders where the Fruit Trees stand: The least Width of these Slips should be 25 or 30 Feet, but if they are double that, it will be yet better, and the Slips will be more useful, and the Fruit Trees will have a larger Scope of good Ground for their Roots to run. These Walls should be built about 12 Feet high, which will be a sufficient Height for any Sort of Fruit. If the Soil where

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you intend to place your Kitchen Garden be very strong, then you should plough or dig it 3 or 4 Times before you plant any Thing therein; and if you throw it up in Ridges to receive the Frost in Winter, it will be of great Service to meliorate and loosen its Parts.

The Manure most proper for such Soils, is Sea Coal Ashes, and the Cleansing of Streets or Ditches, which will render it light much sooner than any other Dung or Manure; and the greater the Quantity of Ashes the better, especially if the Ground be cold; and where these Ashes are not to be obtained in Plenty, Sea Sand is very proper, or rotten Wood, or the Parts of Vegetables rotted are very good; all which will greatly loosen the Soil, and cause it to be not only easier to work, but also more advantageous for the Growth of Plants.

But, on the contrary, if your Soil be light and warm, you should manure it with rotten Neats Dung, which is much preferable to any other for hot Soils; but if you use Horse Dung it must be well rotted, otherwise it will burn up the Crops upon the first hot dry Weather.

The Soil of this Garden should be at least 2 Feet deep, but if deeper it will be still better, otherwise there will not be depth enough for many Sorts of esculent Roots, as Carrots, Parsneps, Beets, &c. which run down pretty deep in the Ground, and most other Sorts of esculent Plants delight in a deep Soil; and many Plants, whose Roots appear short, yet if their Fibres by which they receive their Nourishment are traced, they will be found to extend to a considerable Depth in the Ground; so that when these are stopped by meeting with Gravel, Chalk, Clay, &c. the Plants will soon shew it, by their Colour and stunted Growth.

You should also endeavour to have a Supply of Water in the different Parts of the Garden, which, if possible should be contained in large Basins or Reservoirs, where it may be exposed to the open Air and Sun, that it may be softened thereby; for Water taken out of Wells, &c. just as it is used, is by no Means proper for any Sort of Plants.

In the Distribution of this Garden, after having built the Walls, you should lay out Banks or Borders under them, which should be at least 8 or 10 Feet broad, whereby the Roots of the Fruit Trees will have greater Liberty than in such Places where the Borders are not above 3 or 4 Feet wide; and upon these Banks you may sow many Sorts of early Crops, if exposed to the South; and upon those exposed to the North, you may have some late Crops; but I would by no Means advise the planting any Sort of deep rooting Plants too near the Fruit Trees, especially Peas and Beans; though for the advantage of the Walls, to preserve them in Winter, and to bring them forward in the Spring, the Gardeners in general are too apt to make use of those Borders, which are near the best aspected Walls, to the great Prejudice of their Fruit Trees; but for these Purposes it is much better to have some Reed Hedges fixed in some of the warmest Quarters, under which you should sow and plant early Peas, Beans, &c. where they will thrive as well as if planted under a Wall, and hereby your Fruit Trees will be entirely freed from such troublesome Plants.

Then you should proceed to dividing the Ground out into Quarters, which must be proportioned to the Largeness

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ness of the Garden: but I would advise never to make them too small, whereby your Ground will be lost in Walks; and the Quarters being enclosed by Espaliers of Fruit Trees, the Plants therein will draw up slender, and never arrive to half the Size they would do in a more open Exposure.

The Walks of this Garden should be also proportioned to the Size of the Ground, which in a small Garden should be 6 Feet, but in a large one 10; and on each Side of the Walk should be allowed a Border 3 or 4 Feet wide between the Espalier and the Walk, whereby the Distance between the Espaliers will be greater, and the Borders being kept constantly worked and manured, will be of great Advantage to the Roots of the Trees; and in these Borders may be sown some small Salad, or any other Herbs, which do not continue long or root deep, so that the Ground will not be lost.

The Breadth of these middle Walks which I have here assigned them, may by many Persons be thought too great; but my Reason for this is to allow proper Room between the Espaliers, that they may not shade each other, or their Roots interfere and rob each other of their Nourishment; but where the Walks are not required of this Breadth, it is only enlarging the Borders on each Side, and so reducing the Walks to the Breadth desired.

But the Walks of these Gardens should not be gravelled, for as there will constantly be Occasion to wheel Manure, Water, &c. upon them, they would soon be defaced, and rendered unsightly; nor should they be laid with Turf, for in green Walks, when they are wheeled upon, or much trodden, the Turf is soon destroyed, and those Places where they are much used, become very unsightly also, therefore the best Walks for a Kitchen Garden are those which are laid with a binding Sand; but where the Soil is strong and apt to detain the Wet, there should be some narrow under Ground Drains made by the Side of the Walks, to carry off the Wet, otherwise there will be no using the Walks in bad Weather; and where the Ground is wet, if some Lime Rubbish, Flints, Chalk, or any such Material as can be procured with the least Expence, is laid at the Bottom of these Walks; and if neither of these can be had, a Bed of Heath or Furze laid, and the Coat of Sand laid over it, the Sand will be kept drier, and the Walks will be sound and good in all Seasons. These Sand Walks are by much the easiest kept of any, for when either Weeds or Moss begin to grow, it is but scuffling them over with a *Dutch Hoe* in dry Weather, and raking them over a Day or two after, and they will be as clean as when first laid.

The best Figure for the Quarters to be disposed into, is a Square or an Oblong, where the Ground is adapted to such a Figure; otherwise they may be triangular, or of any other Shape, which will be most advantageous to the Ground.

When the Garden is laid out in the Shape intended, if the Soil is strong, and subje& to detain the Moisture, or is naturally wet, there should always be under Ground Drains made, to carry off the Wet from every Quarter of the Garden, for otherwise most Sorts of Kitchen Plants will suffer greatly by Moisture in Winter; and if the Roots of the Fruit Trees get into the Wet, they

will never produce good Fruit, so that there cannot be too much Care taken to let off all superfluous Moisture from the Kitchen Garden.

These Quarters should be constantly kept clear from Weeds, and when any Part of the Ground is unoccupied, it should always be trenched up into Ridges, that it may sweeten and imbibe the nitrous Particles of the Air, which is of great Advantage to all Sorts of Land, and the Ground will then be ready to lay down whenever it is wanted.

The Ground in these Quarters should not be sown or planted with the same Crop two Years together, but the Crops should be annually changed, whereby they will prove much better than when they constantly grow upon the same Spot. Indeed the Kitchen Gardeners near *London*, where the Land is dear, are often obliged to put the same Crop upon the Ground for two or three Years together; but then they dig and manure their Land so well every Year, as to render it almost new; though notwithstanding all this, it is constantly observed, that fresh Land always produces the best Crops.

In one of these Quarters, which is situated nearest to the Stables, and best defended from the cold Winds, or if either of the Slips without the Garden Wall, which is well exposed to the Sun, lies convenient, and is of a proper Width, that should be preferred, for a Place to make hot Beds for early Cucumbers, Melons, &c. The Reasons for my giving the Preference to one of these Slips, is, first, there will be no Dirt or Litter carried over the Walks of the Kitchen Garden in Winter and Spring, when the Weather is generally wet, so that the Walks will be rendered unsightly; secondly, the View of the hot Beds will be excluded from Sight; and lastly, the Convenience of carrying the Dung into these Slips, for by making a Gate in the Hedge, or Pale, wide enough for a small Cart to enter, it may be done with much less Trouble than that of barrowing it through the Garden; and where there can be a Slip long enough to contain a sufficient Number of Beds for 2 or 3 Years, it will be of great Use, because by Shifting the Beds annually, they will succeed much better than when they are continued for a Number of Years on the same Spot of Ground; and as it will be absolutely necessary to fence this Melon Ground round with a Reed Hedge, it may be so contrived as to move away in Pannels, and then that Hedge which was on the upper Side the first Year, being carried down to a proper Distance below that which was the lower Hedge, and which may remain, there will be no Occasion to remove more than one of the cross Hedges in a Year, therefore I am persuaded, whoever will make Trial of this Method, will find it the most eligible.

The most important Points of general Culture consist in well digging and manuring the Soil, and giving a proper Distance to each Plant, according to their different Growths (which is constantly exhibited in their several Articles in this Book,) and also in keeping them clear from Weeds, for if Weeds are permitted to grow until their Seeds are ripe, they will shed upon the Ground, and fill it so as not to be gotten out again in several Years. You should also observe to keep your Dunghills always clear from Weeds, for it will be to little Purpose to keep the Garden clean, if this is not observed;

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observed; for the Seeds falling among the Dung, will be brought into the Garden, whereby there will be a constant Supply of Weeds yearly introduced, to the no small Damage of your Plants, and a perpetual Labour occasioned to extirpate them again. Another Thing absolutely necessary to be observed, is, to carry off all the refuse Leaves of Cabbages, the Stalks of Beans, and Haulm of Peas, as soon as they are done with, for the ill Scent which most People complain of in Kitchen Gardens, is wholly occasioned by these Things being suffered to rot upon the Ground; therefore when the Cabbages are cut, all Leaves should be carried out of the Garden while they are fresh, at which Time they may be very useful for feeding Hogs, or other Animals, and this will always keep the Garden neat, and free from ill Scents. As for all other necessary Directions, they will be found in the Articles of the several Sorts of Kitchen Plants.

KLEINIA. See *Cacalia*.

KNAUTIA. *Lin. Gen. Pl.* 109. *Lychni-Scabiosa*. *Boerb. Ind.* 1. 131.

This Name was applied to this Plant by Dr. *Linnaeus*, in Honour to the Memory of Dr. *Christian Knaut*, who published a Method of classing Plants.

The Characters are,

It hath several floscular Flowers inclosed in one common cylindrical Empalement; these several Floscules have their

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Petals ranged so as to appear a regular Flower, but each separate Floscule is irregular, consisting of 1 Leaf, which is tubulous, but spreads open at the Top, where it is cut into 4 Segments, the outer one being the largest; in the Bottom of each Floret, is situated the Pointal, attended by 4 long Stamina: The Pointal afterward changes to a single oblong naked Seed.

There is but one Species of this Plant at Present known, viz.

KNAUTIA. *Lin. Hort. Cliff.* This Plant is very near akin to the Scabious, under which Genus it has been ranged by several Botanists, but the Appearance of the Flower at first Sight being like a *Lychnis*, Dr. *Boerhaave* separated it from the Scabious, and gave it the Title of *Lychni Scabiosa*, which being a compound Name, Dr. *Linnaeus* has altered it to this of *Knautia*.

This is an annual Plant, the Seeds of it were brought from the *Archipelago*, where it is a Native; but when it is allowed to scatter its Seeds in a Garden, it will propagate itself in as great Plenty as if it were a Native of *England*; and these autumnal Plants, which arise from the scattered Seeds, will grow much stronger than those sown in the Spring. All the Culture this Plant requires is, to keep it clear from Weeds, for it will thrive on almost any Soil, or any Situation.

KNIGHTS CROSS, or **SCARLET CROSS** is the Scarlet *Lychnis*. See *Lychnis*.

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LABIATE FLOWERS are such as have Lips, or more properly, a labiated Flower, is an irregular monopetalous Flower, divided into 2 Lips; the upper is called the Crest, the under, the Beard; sometimes the Crest is wanting, and then the Style and Chives supply its Place, as in the Ground Pine, *Scordium*, *Bugula*, &c. but the greatest Part have 2 Lips, which, in some Species the upper Lip is turned upwards, as the Ground Ivy, &c. but most usually the upper Lip is convex above, and turns the hollow Part down to the lower Lip, and so represents a Kind of Helmet, or Monk's Hood, from whence these are called Galeate, Cucullate, and Galericulate Flowers, in which Form are most of the verticillate Plants.

LABLAB. See *Phaseolus*.

LABRUM VENERIS. See *Dipsacus*.

LABRUSCA. See *Vitis*.

LABURNUM. See *Cytisus*.

LABYRINTH [*Λαβύρινθος*] a winding, mazy, and intricate Turning, through a Wilderness, or Wood.

The Design of a Labyrinth is, to cause an intricate and difficult Labour to find out the Center, and the Aim is, to make the Walks so intricate, that a Person may lose himself in them, and meet with as great a Number of Stops and Disappointments as is possible, they being the most valuable that are the most intricate.

As to the Contrivance of them, it will not be possible to give Directions in Words, there are several Plans

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and Designs in Books of Gardening; they are rarely met with but in great and noble Gardens, as *Hampton Court*, &c.

There are two Ways of making them, the first is with single Hedges; this Method has been practised in *England*. These, indeed, may be best, where there is but a small Spot of Ground to be allowed for making them, but where there is Ground enough, the double are most eligible.

Double ones, or those that are made with double Hedges of a considerable Thickness of Wood between Hedge and Hedge, are approved as much better than single ones, as is the Manner of making them in *France*, and other Places, of all which, that of *Versailles* is allowed by all to be the noblest of its Kind in the World.

It is an Errour in Labyrinths in making them too narrow, for by that Means the Hedges must be kept close clipt; whereas, if the Walks are made wider, according to the foreign Practice, they will not stand in need of it.

The Walks are made with Gravel, usually set with Hornbeams; the Pallisades ought to be ten, twelve, or Fourteen Feet high; the Hornbeam should be kept cut, and the Walks rolled.

LACRYMA JOBI [so called, because the Seeds of it resembles a Tear, or Drop.] Job's Tears. See *Coix*.

LACTIFEROUS PLANTS are such as abound with

with a milky Juice, as the *Tithymalus*, *Sonchus*, *Lactuca*, &c.

LACTUCA *Tourn. Inst. R. H. 473. Tab. 267. Lin. Gen. Pl. 814.* Lettuce; in French, *Laitue*.

The Characters are,

The Flowers are composed of several hermaphrodite Florets, inclosed in one scaly oblong Empalement; these lie over each other like the Scales of Fish. The Florets have 1 Petal, stretched out on one Side like a Tongue, and slightly indented at the End in 3 or 4 Parts; these have 5 short hairy Stamina, supporting a slender Style, crowned by 2 reflexed Stigmas. The Germen becomes 1 oblong pointed Seed, crowned with a single Down, sitting in the scaly Empalement.

It would be beside my Purpose to mention in this Place the several Sorts of Lettuce to be found in Botanick Writers, many of which are Plants of no Use; and never cultivated but in Botanick Gardens for Variety, and some of them are found wild in many Parts of England. I shall therefore pass over those, and only mention here the several Sorts cultivated in the Kitchen Garden for Use: 1. Common, or Garden Lettuce. 2. Cabbage Lettuce. 3. *Cilicia* Lettuce. 4. Dutch Brown Lettuce. 5. *Aleppo* Lettuce. 6. Imperial Lettuce. 7. Green Capuchin Lettuce. 8. *Verfailles*, or Upright White Cos Lettuce. 9. Black Cos. 10. White Cos. 11. Red Capuchin Lettuce. 12. Roman Lettuce. 13. Prince Lettuce. 14. Royal Lettuce. 15. *Egyptian* Cos Lettuce.

The first of these Sorts is commonly sown for cutting very young, to mix with other small Salad Herbs, and is only different from the second Sort, in being a Degeneracy therefrom, or otherwise the second is an Improvement by frequent Cultivation from the first; for if the Seeds are saved from such Plants of the second Sort as did not Cabbage closely, the Plants produced from that Seed will all degenerate to the first Sort, which is by the Gardeners called Lapped Lettuce, to distinguish it from the other, which they call Cabbage Lettuce. The Seeds of the first, which are commonly saved from any of the Plants, without Regard to their Goodness, are generally sold at a very cheap Rate (especially in dry Seasons, when these Plants always produce the greatest Quantity of Seeds,) though sometimes this Seed is sold in the Seed Shops, and by Persons who make a Trade of selling Seeds, for the Cabbage Lettuce, which is often the Occasion of Peoples being disappointed in their Crop; so that this Sort should never be cultivated but to be cut up very young, for which Purpose this is the only good Sort, and may be sown any Time of the Year, observing only in hot Weather to sow it on shady Borders, and in the Spring and Autumn upon warm Borders, but in Winter it should be sown under Glasses, otherwise it is subject to be destroyed by severe Frosts.

The Cabbage Lettuce may also be sown at different Times of the Year, in order to have a Continuation of it through the whole Season. The first Crop is generally sown in February, which should be on an open warm Spot of Ground, and when the Plants are come up, they should be thinned out to the Distance of 10 Inches each Way, which may be done by hoeing them out, as is practised for Turneps, Carrots, Onions, &c.

provided you have no Occasion for the superfluous Plants, otherwise they may be drawn up, and transplanted into another Spot of good Ground at the same Distance, which, if done before the Plants are too large, they will succeed very well, though they will not be so large as those which were left upon the Spot where they were sown, but they will come somewhat later, which will be of Service where People do not continue sowing every Fortnight.

You must also observe in sowing the succeeding Crops, as the Season advances, to choose a shady moist Situation, but not under the Drip of Trees, otherwise, in the Heat of Summer they will run up to Seed before they cabbage. In the Beginning of August you should sow the last Crop, which is to stand over Winter; the Seeds should be sown thin upon a good light Soil, in a warm Situation; and when the Plants are come up, they must be hoed out, so as to stand singly, and cut down all the Weeds to clear them. In the Beginning of October they should be transplanted into warm Borders, where, if the Winter be not very severe, they will stand very well; but in order to be sure of a Crop, it will be advisable to plant a few on a Bed pretty close, where they may be arched over with Hoops, and in severe Frosts they should be covered with Mats and Straw, or Peas Haulm, to secure them from being destroyed; and in the Spring of the Year they may be transplanted out into a warm rich Soil, at the Distance before-mentioned, but still those which grew under the Wall, if they escaped the Winter, and were suffered to remain, will cabbage sooner than those which are removed; but you must observe not to place them too close to the Wall, which would occasion their growing up tall, and prevent their being large or hard.

In order to save good Seeds of this Kind, you should look over your Lettuces when they are in Perfection, and such of them as are very hard, and grow low, should have Sticks thrust into the Ground, by the Sides of as many of them, to mark them from the rest; and you should carefully pull up all the rest from among them as soon as they begin to run up, if any happen to be left, left when they are run up to Flower, they should, by intermixing with the good ones, degenerate the Seeds.

It may be some Persons may object, that if some bad ones should happen to be left among them (for Seeds to sow for small Salads,) yet the good ones being marked, the Seeds need not be mixed, and so no Danger can ensue from thence; but notwithstanding ever so much Care be taken to keep the Seeds separate, yet, whether from the intermixing of the Farina during the Time of their being in flower, or what other Cause, I cannot say, but it hath been observed, that where good and bad Plants have seeded upon the same Spot, the Seeds of the good Plants, which were carefully saved separately, have very much degenerated, and proved worse than such as have seeded by themselves. The Seeds should always be saved either from those which stood through the Winter, or those which were sown early in the Spring, for the late ones very seldom perfect their Seeds.

The *Cilicia*, Imperial, Royal, Black, White, and Upright Cos Lettuces may be sown at the following Times; the

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the first Season for sowing these Seeds is at the latter End of *February*, or the Beginning of *March*, upon a warm light Soil, and an open Situation, *i. e.* not overshadowed with Trees; and when the Plants are come up, they should be either hoed out, or transplanted into another Spot of Ground (as was directed for the Cabbage Lettuce,) observing to leave these Sorts 15 or 16 Inches apart each Way, which will be full near enough for these Plants, especially if the Soil be good, and you must carefully keep them clear from Weeds, which is the only Culture they will require, except the Black Cos Lettuce, which should be tied up when they are full grown (in the Manner directed for blanching Endive,) to whiten their inner Leaves, and render them crisp, otherwise they are seldom good for much, rarely cabbaging without this Assistance.

When your Lettuces are in Perfection, you should look over them, and mark as many of the best of them as you intend for Seed (in the Manner directed for the common Cabbage Lettuce,) being very careful not to suffer any ordinary ones to seed among them, as was before observed, which would prove more injurious to these Sorts than to the common, as being more inclinable to degenerate with us, if they are not carefully preserved.

You may also continue these Sorts through the Season, by sowing them in *April*, *May*, and *June*, observing (as was before directed) to sow the late Crops in a shady Situation, otherwise they will run up to Seed before they grow to any Size, but in the Middle of *September* you may sow of these Sorts, to abide the Winter, which Plants should be transplanted either under Glasses, or into a Bed, which should be arched over with Hoops, in order to be covered in Winter, otherwise in hard Winters they are often destroyed, but you must constantly let these Plants have as much free Air as possible, when the Weather is mild, only covering them in hard Rains, or frosty Weather, for if they are kept too closely covered in Winter, they will be subject to a Mouldiness, which soon rots them.

In the Spring these Plants should be planted out into a rich light Soil, allowing them at least 18 Inches Distance each Way, for if they are planted too close, they are very subject to grow tall, but seldom cabbage well; and from this Crop, if they succeed well, it will be proper to save your Seeds; though you should also save from that Crop sown in the Spring, because sometimes it happens, that the first may fail by a wet Season, when the Plants are full in flower, and the second Crop may succeed, by having a more favourable Season afterward; and if they should both succeed, there will be no Harm in that, since the Seeds will grow very well when 2 Years old, and if well saved, at 3, but this will not always happen.

The most valuable of all the Sorts of Lettuce in *England*, are the *Egyptian Green Cos*, and the *Verfailles*, or *White Cos*, the *Cilicia*, and *Black Cos*, though some People are very fond of the *Royal* and *Imperial* Lettuces, but they seldom sell so well in the *London* Markets as the other, nor are so generally esteemed. Indeed of late Years, since the *White Cos* has been commonly cultivated, it has obtained the Preference of all the other Sorts, until the *Egyptian Green Cos* was introduced, which is so much sweeter and tenderer than

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the *White Cos*, that it is by all good Judges esteemed the best Sort of Lettuce yet known. This Sort will endure the Cold of our ordinary Winters full as well as the *White Cos*; but at the Season of its Cabbaging, if there happens to be much Wet, this being very tender, is very subject to rot.

The *Brown Dutch* and *Green Capuchin* Lettuces, are very hardy, and may be sown at the Seasons directed for the common Cabbage Lettuce, and are very proper to plant under a Wall, or Hedge, to stand the Winter, where many Times these will abide, when most of the other Sorts are destroyed, and therefore they will prove very acceptable, at a Time when few other Sorts are to be had; they will also endure more Heat and Drought than most other Sorts of Lettuce, which renders them very proper for late sowing, for it often happens, in very hot Weather, that the other Sorts of Lettuce will run up to Seed in a few Days after they are cabbaged, whereas these will abide near 3 Weeks in good Order, especially if Care be taken to cut the forwardest first, leaving those that are not so hard cabbaged to be last. In saving these Seeds, the same Care should be taken to preserve only such as are very large, and well cabbaged, otherwise the Seeds will degenerate, and be good for little.

The *Red Capuchin*, *Roman*, and *Prince* Lettuces are pretty Varieties, and Cabbage very early, for which Reason a few of them may be preserved, as may also some of the *Aleppo*, for the beauty of its spotted Leaves, though very few People care for either of these Sorts at Table, when the other more valuable ones are to be obtained; but in a Scarcity, these may supply the Place pretty well, and these Sorts are very proper for Soups. The Seeds of these must also be saved from such as cabbage best, otherwise they will degenerate, and be good for little.

In saving Seeds of all these Sorts of Lettuce, you should observe, never to let two Sorts stand near each other, for by their Farina mixing, they will both vary from their Original, and partake of each other, and there should be a Stake fixed down by the Side of each, to which the Stem should be fastened, to prevent their being broken, or blown out of the Ground by Wind, to which the *Cilicia Cos*, and the other large growing Lettuces, are very subject when in flower. You must also observe to cut such Branches of the large growing Lettuces as ripen first, and not wait to have the Seed of the whole Plant ripe together, which never happens; but, on the contrary, some Branches will be ripe a Fortnight or three Weeks before others, and when you cut them, they must be spread upon a coarse Cloth in a dry Place, that the Seeds may dry, after which you should beat them out, and dry them again, and then preserve them for Use, being careful to hang them up where Mice and other Vermin, cannot come at them, for if they do, they will soon eat them up.

LACTUCA AGNINI. See Valerianella.

LADY'S SLIPPER. See Cypripedium.

LADY'S SMOCK. See Cardamine.

LAGECIA, Bastard Cumin.

The Characters are,

It hath many Flowers collected into a Head, which have a common Empalement, composed of 3 indented Leaves,

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but the simple Empalement to each Flower hath 4 Leaves, very narrow and pennated. The Flower consists of 5 borned Petals, shorter than the Empalement; at the Bottom of each Flower is situated the Pointal, attended by 5 Stamina, which are long and narrow; the Pointal afterward changes to an oval Seed, crowned with the Empalement.

There is but one Species of this Plant, viz.

LAGOECIA. *Lin. Hort. Cliff.* Bastard, or Wild Cumin. We have no other English Name for this Plant, nor is this a very proper one, but as it has been titled by some of the ancient Botanists *Cuminum sylvestre*, i. e. Wild Cumin, and by Dr. Tournefort it is made a distinct Genus, by the title of *Cuminoides*, it may be styled Wild, or Bastard Cumin.

This is an annual Plant, which grows about a Foot high. The Leaves resemble those of the Honeywort. The Flowers, which are of a greenish yellow Colour, are collected in spherical Heads at the Extremity of the Shoots; but there being little Beauty in the Plant, it is rarely cultivated, except in Botanick Gardens. It grows plentifully about Aix, in Provence, as also in most of the Islands of the Archipelago. It is annual, and perishes soon after the Seeds are ripe. The Seeds of this Plant should be sown in Autumn, soon after they are ripe, or if they are permitted to scatter, the Plants will come up, and require no other Care but to clear them from Weeds. When the Seeds are sown in the Spring, they commonly remain in the Ground a Year before they grow, and sometimes I have known them lie 2 or 3 Years in the Ground, so that if the Plants do not come up the first Year, they should not be disturbed.

LAGOPUS. See Trifolium.

LAMINATED, signifies plated. Those Things are said to be laminated, whose Contexture discovers such a Disposition as that of Plates lying over one another.

LAMIUM. *Tourn. Inst. R. H.* 183. *Tab.* 89. *Lin. Gen. Pl.* 636. Dead Nettle, or Archangel.

The Characters are,

The Flower hath a permanent Empalement of 1 Leaf, which is tubulous, and cut into 5 equal Segments at the Top, which end in Beards. The Flower is of the Lip Kind, it hath 1 Petal, with a short cylindrical Tube, swollen at the Chaps and compressed; the upper Lip is arched, roundish, obtuse, and entire; the under is short, Heart-shaped, reflexed, and indented at the End. It hath 4 Awl-shaped Stamina joined to the upper Lip, 2 of which are longer than the other, terminated by oblong hairy Summits. It hath a four cornered Germen, supporting a slender Style situated with the Stamina, and crowned by an acute two pointed Stigma; the Germen becomes 4 three cornered Seeds, sitting in the open Empalement.

The Species are,

1. LAMIUM foliis cordatis obtusis petiolatis. *Hort. Cliff.* 314. Dead Nettle with Heart-shaped obtuse Leaves standing on Foot Stalks. *Lamium purpureum fœtidum, folio subrotundo, five Galeopsis Dioscoridis.* C. B. P. Purple stinking Archangel, or Dead Nettle, or the Galeopsis of Dioscorides with a roundish Leaf.

2. LAMIUM foliis cordatis acuminatis serratis petiolatis. *Hort. Cliff.* 314. Dead Nettle with pointed Heart-shaped Leaves which are sawed, and have Foot Stalks. *Lamium album, non fœtens, folia oblongo.* C. B. P.

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White Archangel or Dead Nettle, which does not stink, with an oblong Leaf.

3. LAMIUM foliis cordatis crenatis villosis, labio floris superiore crenato. Dead Nettle with Heart shaped crenated Leaves which are hairy, and the upper Lip of the Flower crenated. *Lamium garganicum subincanum, flore purpurascens, cum labio superiore crenato.* Micheli. Hoary Dead Nettle with a purplish Flower, whose upper Lip is crenated.

4. LAMIUM foliis cordatis obtusis glabris, floralibus sessilibus, calycibus profundè incis. Dead Nettle with Heart-shaped obtuse smooth Leaves, the upper sitting close to the Stalks, and the Empalements deeply cut. *Lamium Orientale, nunc moschatum, nunc fœtidum, magno flore.* Tourn. Cor. Eastern Dead Nettle, sometimes sweet scented, and sometimes stinking, with a large Flower.

5. LAMIUM foliis cordatis nervosis serratis, petiolis longioribus, caule erecto. Dead Nettle with Heart-shaped veined Leaves sawed, and longer Foot Stalks with an erect Stalk. *Lamium montanum melissæ folio.* C. B. P. 231. *Icon. Pl.* 158. Mountain Dead Nettle with a Balm Leaf.

There are several other Species of this Genus, as also some Varieties of it, but as they are many of them Weeds, I have passed them over, for there are few who care to admit them into their Gardens.

The 1st Sort grows naturally in most Parts of England, under Hedges and by the Side of Highways; it is also a troublesome Weed in Gardens, but as it stands in most of the Dispensaries as a medicinal Plant, I have chosen to insert it. This is an annual Plant, whose Stalks seldom rise more than 4 or 5 Inches high; the under Leaves are Heart-shaped, blunt, and stand on pretty long Foot Stalks, but the upper Leaves sit nearer to the Stalks; the Flowers come out in Whorls on the upper Part of the Stalk; they are of a pale purple Colour, and are succeeded by 4 naked Seeds sitting in the Empalement; after the Seeds are ripe the Plant decays. It flowers from the Middle of March, when the autumnal self-sown Plants appear; these are succeeded by others, which continue in Succession all the Summer.

The 2d Sort is commonly called Archangel; this is also used in Medicine, for which Reason I have enumerated it here. The Roots of this Sort are perennial and creep much in the Ground, so is difficult to extirpate, where it happens to grow under Bushes and Hedges, for the Roots intermix with those of the Bushes, and every small Piece of them will grow and spread. The Stalks of this rise much higher than those of the last, the Flowers are larger, white, and grow in Whorls round the Stalks; these continue in Succession most Part of Summer.

The 3d Sort grows naturally upon the Mountains in Italy; this hath a perennial creeping Root, from which arise many thick square Stalks a Foot high, garnished with Heart-shaped Leaves which are hairy, placed by Pairs opposite, standing on pretty long Foot Stalks; the Flowers come out in Whorls at the Joints of the Stalk, they are large, and of a pale purplish Colour; these continue in Succession most Part of the Summer, and the Flowers are succeeded by Seeds, which ripen about 6 Weeks after. This may be propagated by Seeds,

Seeds, but as the Roots spread greatly in the Ground, when once it is obtained, it will propagate fast enough without Culture.

The 4th Sort grows naturally in the *Archipelago*; this is an annual Plant, which, if permitted to scatter its Seeds, will come up in the Autumn, and thrive better than when sown by Hand. The Plants come up in Autumn, and during the Winter their Leaves make a pretty Appearance, for they are marked with white somewhat like those of the autumnal Cyclamen; the Stalks rise 8 or 9 Inches high, they are garnished with smooth Heart-shaped Leaves placed opposite; these in dry Weather have a musky Scent, but in wet Weather are fetid; the Flowers are white, standing in Whorls round the Stalks. They appear in *April*, and the Seeds ripen in *June*, then the Plants decay; this requires no Culture, but to keep the Plants clear from Weeds.

The 5th Sort grows naturally in *Portugal*; this hath a perennial Root and an annual Stalk, which rises a Foot and a Half high; it is strong, square, and grows erect; the Leaves are large, Heart-shaped, and much veined; they are deeply sawed on their Edges, and placed by Pairs opposite. The Flowers come out in Whorls round the Stalks at every Joint, they are very large and of a deep purple Colour; those on the lower Part of the Stalks appear the Beginning of *May*, which are succeeded by others above, so that there is a Continuance of Flowers almost two Months on the same Stalks. This Plant very rarely produces good Seeds in *England*, nor do the Roots propagate very fast, so that it is not common here.

The best Time to remove and part these Roots is in *October*, but they must not be transplanted oftener than every third Year, if they are required to flower strongly, for the great Beauty of this Plant consists in the Number of Stalks, which are always proportional to the Size of the Plants; for small Plants will put out one or two Stalks only, whereas the large ones will have 8 or 10. The Roots are hardy, and will thrive best in a soft loamy Soil.

LAMPSANA. See Lapsana.

LAND. Its Improvement.

1. By Inclosing.

Inclosing Lands, and dividing the same into several Fields, for Pasture or Tillage, is one of the principal Ways of Improvement; first, by ascertaining to every Man his just Property, and thereby preventing an Infinity of Trespases and Injuries, that Lands in common are subject unto, beside the Disadvantage of being obliged to keep the same Seasons with the other People who have Land in the same Field; so that the sowing, fallowing, and tilling the Ground, must be equally performed by all the Landholders; and when there happens a slothful negligent Person, who has Land intermixed with others, it is one of the greatest Nuisances imaginable. Secondly, it being of itself a very great Improvement; for where Land is properly inclosed, and the Hedge Rows planted with Timber Trees, &c. it preserves the Land warm, and defends and shelters it from the violent cold nipping Winds, which, in severe Winters, destroy much of the Corn, Pulse, or whatever grows on the open Field or champain Grounds. And where it is laid down for Pasture, it yields much

more Grass than the open Fields, and the Grass will begin to grow much sooner in the Spring. The Hedges and Trees also afford Shelter for the Cattle from the cold Winds in Winter as also Shade for them in the great Heats of Summer. And these Hedges afford the diligent Husbandman Plenty of Fuel, as also Ploughboot, Cart-boot, &c. And where they are carefully planted and preserved, furnish him with Timber and Mast for his Swine; or where the Hedge Rows are planted with Fruit Trees, there will be a Supply of Fruit for Cyder, Perry, &c. which in most Parts of *England* are of no small Advantage to the Husbandman.

By this Method of inclosing, there is also much more Employment for the Poor, and is therefore a good Remedy against Beggary; for in those open Countries, where there are great Downs, Common, Heaths, and Wastes, there is nothing but Poverty and Idleness to be seen amongst the Generality of their Inhabitants. It is very observable of late Years, how advantageous the inclosing the Land in *Worcestershire*, and some other Countries at a Distance from *London*, has been to the Inhabitants; for before this Method was introduced among them, the Lands for the most Part lay in Commons, &c. on which the poorer Sort of People built themselves Cottages with Mud Walls, where they contented themselves with a Cow or two, and some Swine; and those of them who were more industrious than the rest, travelled to the Neighbourhood of *London* every Spring, where they were employed in the Gardens and Fields for the Summer Season; and in Autumn they returned to their native Countries, where they lived in Winter, on what Money they had saved in Summer. But since they have converted their Wastes and Commons into Inclosures, there are but few of the Inhabitants of those Countries, who come to *London* for Work, in Comparison to the Numbers that formerly came; so that most of the Labourers, who come to *London* for Employment, are either *Welsh*, or Inhabitants of some distant Counties, where this Improvement hath not as yet been introduced.

The Advantages of inclosing Land are now so generally known, that there is no Occasion for me to enumerate them here; since the Improvements which have been made of late Years in several Parts of *England*, and the Increase of Rent that is every where made by those who inclose, are sufficient Arguments to enforce the Practice, and render it general; more especially in the North, where it is most neglected, because it would greatly shelter the Lands, and render them much warmer than they now are.

In inclosing Land, Regard should be had to the Nature of the Soil, and what it is intended for, because Corn Land should not be divided into small Parcels; for besides the Loss of Ground in Hedges, &c. the Corn doth seldom thrive so well in small Inclosures, as in more open Fields, especially where the Trees are large in the Hedge Rows. The Grass also in Pastures is not so sweet near Hedges, or under the Drip of Trees, as in an open Exposure; so that where the Inclosures are made too small, or the Land over-planted with Trees, the Herbage will not be near so good, nor in so great Plenty, as in larger Fields; therefore, before a Person begins to inclose, he should well consider how

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he may do it to the greatest Advantage; as for Instance, It is always necessary to have some smaller Inclosures near the Habitation, for the Shelter of Cattle, and the Conveniency of shifting them from one Field to another, as the Season of the Year may require; and hereby the Habitation, Barns, Stables, and Out-houses, will be better defended from strong Winds, which often do great Damage to those that are exposed to their Fury. These small Inclosures may be of several Dimensions, some of them 3, 4, 6, or 8 Acres in Extent; but the larger Divisions for Corn should not contain less than 20 or 30 Acres or more, according to the Size of the Farm.

The usual Method of inclosing Land is, with a Ditch and Bank set with Quick. But in Marsh Land, where there is plenty of Water, they content themselves with only a Ditch, by the Sides of which they usually plant Sallows or Poplars, which being quick of Growth, in a few Years afford Shade to the Cattle; and when they are lopped, produce a considerable Profit to their Owners. In some Countries the Division of their Lands is by dry Walls made of flat Stones, laid regularly one upon another, and laying the Top Course of Stones in Clay, to keep them together, the Weight of which secures the under ones. But in some Parts of *Sussex* and *Hampshire* they often lay the Foundation of their Banks with flat Stones, which is of a considerable Breadth at Bottom; upon which they raise the Bank of Earth, and plant the Hedge on the Top, which in a few Years makes a strong durable Fence, especially if they are planted with Holly, as some of those in *Sussex* are.

In Marshes and open Pastures, where there are no Hedges, the Ditches are generally made 6 Feet wide at the Top, especially those which are on the Side of Highways or Commons; but the common Ditches about Inclosures are seldom more than 3 Feet and a Half wide at Top, and 1 and a Half at Bottom, and 2 Feet deep; that the Sides may have a good Slope, and not be too upright, as they are frequently made about *London*, so that they are continually washing down with great Rains. In these narrow bottomed Ditches the Cattle cannot stand to turn themselves, so as to crop the Quick; but where the Ditches are made wider, they should be proportionally deeper: As for Instance, If the Ditch is made 5 Feet broad, it must be 3 deep; and if 6 Feet broad, 3 and a Half deep, and so in Proportion.

The Method of inclosing Lands, by raising high Banks of Earth, on the Side of which the Quick is planted (as is too much practised in many Places near *London*) is intolerable, for it is not only unsightly, but very expensive; because these Banks are continually washing down, so that they must be repaired every Year at least, if not oftener, otherwise the Earth will be in a few Years washed from the Roots of the Quick, and for Want of proper Nourishment, the Hedge will soon decay, which is the Case with the greatest Number of the Hedges about *London*: Besides, it is a very uncertain Way of planting Quick on the Side of a steep Bank, where all the Moisture runs off; so that if the Spring should prove dry after it is planted, there is a great Hazard whether half the Plants will grow, and those that take seldom make much Progress; whereas those planted on the plain Surface, where they enjoy

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the Advantages of Sun and Moisture, will in 4 Years make a better Fence, than one of those Bank Hedges will in 8 Years, and will continue good much longer. Therefore I advise, that the Banks on which the Hedges are to be planted, should not be raised more than one Foot above the Surface of the Ground, where the Land is dry, and in wet Land not more than two Feet, which will be enough.

I shall now mention the most proper Plants for making Fences for the different Soils and Situations, so as to answer the Expectation of the Planter: And first, the white Thorn is esteemed the best for Fencing, and will grow upon almost any Soil and in any Situation, but it succeeds best on a Hazle Loam. Of this there are 3 or 4 Varieties, which differ in the Breadth of their Leaves and the Size of their Haws, but that Sort with the smallest Leaves and Haws will make the closest Fence. For it is very certain, that the Branches of all Sorts of Trees are produced at a Distance, in Proportion to the Size of their Leaves; so that Yews, and other ever-green Trees with small Leaves, will always make a closer Hedge than other Trees whose Leaves are larger. Therefore, for the closest Hedge, the smallest Haws should be chosen; but where the most vigorous Shooters are required, for the Advantage of lopping, there the largest Haws should be preferred. But as these Hedges are usually planted from a Nursery, where the Haws are promiscuously sown, it is very common to see two or three Sorts planted in the same Hedge; which may be easily distinguished, when they have obtained Strength, by the Difference of their Growth. Indeed, where a Person is curious in raising his own Quick, it is worth while to gather the Haws separately and sow them apart; and each Sort should be planted in a separate Hedge, which will render the Hedges more equal in their Growth. If these Haws are sown in the Places where they are designed to remain for a Fence, they will make a much greater Progress in a few Years, than those which are transplanted; but as the Seeds remain a whole Year in the Ground before the Plants appear, few People care to practise this Method.

The next to the white Thorn is the black Thorn, which, though not so generally esteemed as the white, yet will make an excellent Fence, where proper Care is taken in the planting, and after Management of it; and the Loppings of this Hedge make much the best Bushes, and are of longer Duration for dead Hedges, than any other Sort, and are very proper to mend Gaps in Fences; for their Branches being beset with sharp Thorns, the Cattle are not so apt to crop them as the white Thorn, and some other Sorts. These Hedges are also better, if the Stones are sown on the Spot where they are to remain, than where the Plants are taken from a Nursery.

The Crab will also make a strong durable Fence, this may be raised by sowing the Kernels in the Place where the Hedge is designed; but then there should be great Care taken of the Plants while they are young, to keep them clear of Weeds, as also to guard them from Cattle. When these Stocks have obtained Strength, some of them may be grafted with Apples for Cyder, where the Fence is not exposed to a publick Road; but these

these Grafts should not be nearer than 35 or 40 Feet, lest they spoil the Hedge, by their Heads overgrowing and dripping on it.

The Holly is also an excellent Plant for ever-green Hedges, and would claim the Preference to either of the former, were it not for the Slowness of its Growth while young, and the Difficulty of transplanting the Plants when grown to a moderate Size. This will grow best in cold stony Lands, where, if once it takes well, the Hedges may be rendered so close and thick, as to keep out all Sorts of Animals, and will grow to a great Height, and is of long Duration. These Hedges may be raised, by sowing the Berries in the Place where they are designed to remain; but as they continue in the Ground an entire Year before the Plants appear, few Persons care to wait so long; therefore the usual Method is, to plant the Hedges with Plants of 3 or 4 Years Growth. But where this is practised, they should not be transplanted till toward the End of *March*; and the Surface of the Ground should be covered with Mulch near their Roots after they are planted, to keep the Earth moist; and if the Season should prove dry, the Plants should be watered at least once a Week, until they have taken Root, otherwise they will be in Danger of miscarrying.

The Alder will also make a good Hedge, when planted on a moist Soil, or on the Side of Rivers, or large Ditches; and will preserve the Bank from being washed away, where there are running Streams; for they spread pretty much at Bottom, and send forth Suckers from their Roots in great Plenty; but these Hedges should be sheared at least once a Year, in order to make them thick. These Alder Hedges are very ornamental, when they are well kept in large Gardens; and as they will thrive best on wet swampy Lands, where many other Plants will not live, they should be selected for such Situations.

Of late Years the Furz has been much propagated for Hedges in several Parts of *England*, and indeed will make a good Fence on poor, sandy, or gravelly Soils, where few other Plants will grow. The best Method of raising these Hedges is, to sow the Seed about the latter End of *March*, or Beginning of *April*, in the Place where the Hedge is designed; for the Plants will not bear to be transplanted, unless it be done while they are young, and then there is great Hazard of their taking. The Ground where the Seeds are to be sown should be well cleansed of Weeds, and the Surface made light; then there should be two or three Drills made (according to the Width which the Hedge is intended) about half an Inch deep, into which the Seeds should be scattered pretty thick; and then the Drills should be filled up with the Head of a Rake, to cover the Seeds. This Work should be performed in dry Weather, for if much Wet falls soon after the Seeds are sown, it is apt to burst them. When the Plants are come up, they should be kept clear from Weeds, that they may spread and grow thick at Bottom; and if these Hedges are secured from Cattle browsing on them, and are cut every Spring just before they begin to shoot, they will make an exceeding close Fence; but where they are designed to be cut for Fuel, then the best Way is to let them spread in Width; and when they are 2 Years old, to cut them down in the Spring, just before they begin to shoot, within 2 or

3 Inches of the Ground, which will cause them to send forth a Number of Shoots from each Root, and thereby increase the Width of the Hedge; and by so doing, the Plants will not run up tall and weak, and be in Danger of being weighed down by great Falls of Snow. These Hedges when they are well grown, may be cut down every 3d or 4th Year for Fuel; wherefore if there is a treble Row of Furz sown, at about 3 Feet apart, they may be cut down alternately, so that there will be a Fence always remaining. But this is only recommended for such sandy Lands as let for a small Rent, and where Fuel is scarce. The best Sort of Furz for this Purpose is the greater Kind, commonly called the *French Furz*, which will grow to a great Height, and doth not spread so much as the ordinary small Sort.

Elder is sometimes planted for Hedges, being very quick of Growth; so that if Sticks or Truncheons about 4 or 5 Feet long be thrust into a Bank Slopewise each Way, so as to cross each other, and thereby form a Sort of Chequer Work, it will make a Fence for Shelter in one Year. But as this is a vigorous growing Plant, it will never form a close Fence; and the young Shoots being very soft and pithy, are soon broken by Cattle, or Boys in their Sport. Besides, where they are suffered to bear Berries, and these are scattered over the neighbouring Land, they will come up the following Spring, and become very troublesome. Where these Hedges are planted, they may be cut down every third Year near the Ground; and these Stakes (when divested of their Bark, so as to prevent their growing) will last longer in the Ground, to support Vines or any other Plants, which do not require tall Stakes, than any other Sort of Tree yet known. And where the Trees are suffered to grow to any considerable Size, the Wood is as hard as Box, and therefore very useful for Turners and Instrument Makers. The best Season for planting these Truncheons is soon after *Michaelmas*, because these Plants shoot very early in the Spring. Of late Years there have been many Hedges, and other Plantations, made of the white berried Elder, for the Sake of their Fruit to make Wine; which, if rightly made, hath the Flavour of *Frontiniack* Wine, and is by some Persons vended for it.

There are some other Plants which have been recommended for Fences, but those here enumerated are the only useful Sorts for such Purposes; wherefore I shall pass over the others, as not worthy the Care of the Husbandman. And as to the farther Directions for planting and preserving Hedges, with Instructions for plashing or laying them, the Reader is desired to turn to the Articles *Fences* and *Hedges*, where there are particular Directions for these Works exhibited.

The draining Land is also another great Improvement to it; for though Meadows and Pastures, which are capable of being overflowed, produce a greater Quantity of Herbage than dry Land; yet where the Wet lies too long on the Ground, the Grass will be sour and extremely coarse; and where there is not Care taken in Time to drain this Land, it will produce little Grass, and soon be overrun with Rushes and Flags, so as to be of small Value. The Land most liable to this, is cold stiff Clays where the Water cannot penetrate, but is contained as in a Dish; so that the Wet which it receives

receives in Winter, continues till the Heat of the Sun exhales the greatest Part of it.

The best Method for draining these Lands is, to cut several Drains across the Land, in those Places where the Water is subject to lodge; and from these cross Drains to make a convenient Number of other Drains, to carry off the Water to either Ponds or Rivers in the lower Parts of the Land. These Drains need not be made very large, unless the Ground be very low, and so situated as not to be near any River to which the Water may be conveyed; in which Case there should be large Ditches dug at proper Distances, in the lowest Part of the Ground, to contain the Water; and the Earth which comes out of the Ditches should be equally spread on the Land, to raise the Surface. But where the Water can be conveniently carried off, the best Method is, to make under Ground Drains at proper Distances, which may empty themselves into large Ditches, which are designed to carry off the Water. These Sort of Drains are the most convenient, and as they are hid from the Sight, do not incommode the Land, nor is there any Ground lost where these are made.

The usual Method of making these Drains, is to dig Trenches, and fill the Bottoms with Stones, Bricks, Rushes, or Bushes, which are covered over with the Earth, which was dug out of the Trenches; but this is not the best Method, because the Water has not a free Passage through the Drains, so that whenever there is a Flood, these Drains are often stopped by the Soil which the Water frequently brings down with it. The best Method I have yet observed to make these Drains, is, to dig Trenches to a proper Depth for carrying off the Water, which for the principal Drains should be 3 Feet wide at their Top, and sloped down for 2 Feet in Depth, where there should be a small Bank left on each Side, upon which the cross Stakes or Bearers should be laid, and below these Banks there should be an open Drain left, at least 1 Foot deep, and 10 or 11 Inches wide, that there may be Room for the Water to pass through: These larger Drains should be at convenient Distances, and smaller Drains of about 6 or 7 Inches wide, and the Hollow under the Bushes 8 or 9 Inches deep, should be cut across the Ground, which should discharge the Water into these larger Drains. The Number and Situation of them, must be in Proportion to the Wetness of the Land; and the Depth of Earth above the Bushes, must also be proportioned to the intended Use of the Land; for if it is arable Land to be ploughed, it must not be shallower than 14 Inches, that there may be sufficient Depth for the Plough, without disturbing the Bushes; but for Pasture Land, 1 Foot deep will be full enough; for when the Bushes lie too deep in strong Land, they will have little Effect, the Ground above will bind so hard, as to detain the Wet on the Surface. When the Drains are dug, there should be prepared a Quantity of good Brush Wood, the larger Sticks should be cut out to Pieces of about 16 or 18 Inches in Length, which should be laid across upon the two Side Banks of the Drain, at about 4 Inches Distance; then cover these Sticks with the smaller Brush Wood, Furz, Broom, Heath, or any other Kind of Brush, laying it Lengthwise pretty close; on the Top of these may be laid Rushes, Flags, &c. and then the Earth laid on to cover

the whole. These Sort of Drains will continue good for a great Number of Years, and are never liable to the Inconveniences of the other, for the Water will find an easy Passage through them; and where there is Plenty of Brush Wood, they are made at an easy Expence; but in Places where Wood is scarce, it would be chargeable to make them: However, in this Case, it would be a great Advantage to these Lands, to plant a sufficient Number of Cuttings of Willow, or the black Poplar, on some of the moist Places, which would furnish Brush Wood for these Purposes in 4 or 5 Years; and as the Expence of planting these Cuttings is trifling, there cannot be a greater Advantage to an Estate which wants draining, than to practise this Method.

In Countries where there is Plenty of Stone, that is the best Material for making these under Ground Drains; for when these are properly made, they will never want repairing.

The best Time of the Year for making these Drains is about *Michaelmas*, before the heavy Rains of Autumn fall, because at this Season the Land is usually dry, so that the Drains may be dug to a proper Depth; for when the Ground is wet, it will be very difficult to dig to any Depth, because the Water will drain in wherever there is an Opening in the Ground.

When these Drains are made, and the Water carried off the Land, it will be proper to pare off the Rushes, Flags, &c. which may be laid in Heaps in proper Places to rot, and will afford a good Manure for the Land. The Ground must also be ploughed to destroy the Roots of noxious Weeds, and if it be laid fallow for one Season, and ploughed two or three Times, it will greatly mend the Land. The Rushes and Flags which were pared off the Ground when rotten, should be spread over the Surface, and the Grass Seed sown thereon, which will greatly forward the Grass, so that it may soon be brought to a good Turf; which Land thus mended, has been let for four Times the Rent it was set at before.

There are some Persons, who, after they have pared off the Flags, Rushes, &c. from their Land, lay them in small Heaps, and burn them in dry Weather, then spread the Ashes on the Land to improve it, which is a good Method, where a Person is in Haste to have Grass again; but where the Ground can be fallowed one Year, it will loosen the Soil, and more effectually destroy the Roots of all noxious Weeds; and the Rushes, &c. when rotted, will afford a much larger Quantity of Manure for the Land, than when it is burnt: Besides, this can only be practised in the Summer Season, when the Weather is very dry; for if there should fall much Rain, the Fires will go out, and it will be impracticable to burn it. But where the Method of burning is practised, the Heaps should not be too great, and it should burn very slowly; which will render the Ashes a much better Manure, than where the Fire is too violent, or the Heaps too large; for in this Case, the inner Part will be over burnt, before the Fire reaches the Outside of the Heap.

As the draining of cold wet Lands is a great Improvement to them, so the floating or watering of dry loose Land is not a less Advantage to them. This may be easily effected where there are Rivers, or Reservoirs of Water, which are situated above the Level of the Ground designed to be floated, by under Ground Drains (made

(made after the Manner of those before directed for draining Land,) through which the Water may be conveyed at proper Seasons, and let out on the Ground: In order to this, there must be good Sluices made at the Heads of the Drains, so that the Water may never get out, but at such Times as is required; for if this be not taken Care of, the Water, instead of improving the Land, will greatly damage it.

But where the Land lies so high, that there is no Water in the Neighbourhood lying above its Level, it will be more expensive; because in such Case, the Water must be raised by Machines, from Reservoirs or Streams which lie below it. The most common Engine used for this Purpose is the *Persian Wheel* (which, being well described and figured in *Woolridge's Art of Husbandry* is needless for me here to repeat). Yet notwithstanding the Expence of raising the Water, it has been found greatly advantageous in many Parts of *England*, to drown the Lands, for the Profit has many Times more than doubled the Charge.

The Time for drowning Land, is usually from *November* to the End of *April*; but though this is the general Practice, yet I cannot approve of it for many Reasons. The first is, that by the Wet lying continually on the Ground in Winter, the Roots of the finer Sort of Grass are rotted and destroyed; and by letting on of the Water, at the Season when the Seeds of Docks, and other bad Weeds, which commonly grow by River Sides, are falling, these Seeds are carried upon the Land, where they remain and grow, and fill the Ground with bad Weeds, which is commonly the Case with most of the Water Meadows in *England*, the Grass in general being destroyed; so that Rushes, Docks, and other Trumpery, make up the Burden of these Lands; but if these Meadows were judiciously managed, and never floated till *March* or *April*, the Quantity of sweet good Grass would be thereby greatly increased, and the beautiful Verdure of the Meadows preserved. Where the Land is very hot and dry, and it lieth convenient to be watered at a small Expence, it should be repeated every Week in dry hot Weather, which will prove a great Advantage to the Land. But whenever this is done, there should no Cattle be admitted while it is wet, for they will poach, and spoil the Turf.

Another great Improvement of Land, is by burning it, which, for four, heathy, and rushy Land, be it either hot or cold, wet or dry, is a very great Improvement; so that such Lands will, in 2 or 3 Years after burning, yield more, exclusive of the Charges, than the Inheritance was worth before; but this is not to be practised on rich fertile Land, for as the Fire destroys the acid Juice, which occasions Sterility in the poor Land, so it will in like Manner consume the good Juices of the richer Land, and thereby impoverish it, so that it hath been with great Reason disused in deep rich Countries.

The usual Method of burning Land is, to pare off the Turf with a Breast Plough, turning it over as it is cut, that it may dry the better. And if it proves hot dry Weather when this Work is done, then it needs no more turning; but if Rain should fall, it must be turned, and the Turfs set a little hollow, that they may dry the better, and when they are thorough dry, they may be laid on small Heaps, about half a Cart Load on a Heap, or

less, for the smaller the Heaps are, provided there is Quantity enough to make a good Fire, so as to consume the whole to Ashes, it is the better; if the Turf be full of fibrous Roots, or hath much Moss or Fern on it, it will burn without any additional Fuel, but if it hath not, the Heaps should be raised on small Bundles of Heath, Fern, Gorze, &c. which will set the whole on Fire; yet there should be no more of these Things applied, than what is necessary to kindle the Fire, because the slower the Turf consumes, the better will be the Ashes. When the Turf is wholly consumed, the Ashes should be equally scattered over the Ground in a calm Day, lest the Wind should drive it in Heaps. Then the Land should be gently ploughed, and the Seeds sown thereon, for if the Ground is ploughed too deep, the Ashes will be buried too low for the Roots of the Grass or Corn to reach them, for a considerable Time; nor should the Ashes lie too near the Surface, because then the Roots will reach them too soon, and the Strength of the Ashes will be spent to nourish only the Blade, so that the Corn will grow too rank in Winter, and when the Roots in the Spring strike down lower, they will meet with a poorer Soil, nor will the Stalks and Ears have so much Advantage from the Improvement, as the useless Blade. But where Care is taken in this Particular, it is wonderful what Success it hath; for by this Method the poorest Plains, and four heathy Lands, have been rendered as fertile as almost any good cultivated Ground whatever.

It is also a very great Improvement, where Land is overgrown with Broom, Furz, &c. to stub them up by the Roots, and when they are dry, lay them on Heaps, and cover them with the Parings of the Earth, and burn them, and spread the Ashes over the Ground. By this Method vast Tracts of Land, which at present produce little or nothing to their Owners, might be made good at a small Expence, so as to become good Estates to the Proprietors.

There are several other Methods of improving Land, beside those here mentioned, as by planting Wood, or adapting the several Sorts of Plants to the particular Soils with which they agree; but as most of these Things are treated of under the several Articles where these Plants are mentioned, I shall forbear to repeat them in this Place, but shall beg Leave to offer a few general Hints on the present Situation of the Lands in *England*, which may probably excite some abler Hand to undertake a fuller and more complete Disquisition of this Subject.

For some Years past the Quantity of Corn raised in *England*, has greatly exceeded the Consumption, so that great Quantities of Corn have been exported, by which great Sums of Money have been brought into *England*; but this was accidental, for had not the Crops failed in the neighbouring Countries, there would have been no Demand for the Produce of *England*, so that the Quantity here grown must have reduced the Price so low, as to have almost ruined the Farming Interest; nor is it possible to contrive any Scheme, in a Country circumstanced as this, whereby the Publick may not, at Times, suffer from the extravagant Price, which, in a Scarcity, this Commodity may be raised to; or, on the other Hand, the Farmers are not almost undone by the low

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low Price which it is often reduced to, in Times of Plenty; and surely there can be no one Thing more worthy of the serious Attention of every Person, who has the least Regard for the publick Welfare, than this, of always making such Provision of Corn against accidental Scarcities, as that the Inhabitants may never be distressed for want of the Staff of Life, or the Price be so high, that the common People cannot purchase it. If I am not greatly mistaken, there has been, within the Space of three or four Years, such a Disproportion in the Price of Corn, as can hardly be conceived, and this within the Memory of Numbers of Persons; the Time I mean is between 1705, and 1709, in the Compass of which Time the Peck Loaf of fine Bread was risen from fourteen Pence to four Shillings and two Pence; the low Price of this Commodity was as detrimental to the Farmers, as the extravagant Price was afterward to the Publick, neither of which would have so severely felt the Effects, had there been publick Granaries where the Corn might have been deposited, and this purchased from the Farmer, at a Price by which he might live, at the publick Expence, and sold out again at an easy Rate in Times of Scarcity; but I fear this is not an Age for encouraging any Scheme for publick Utility, when in every Thing of this Kind, however beneficial it may be to the Country, and though proposed as such to the Publick, if it meets with any Reception, it is with a View to turn it to private Interest; the Practice of turning all Things into private Jobs, has so much prevailed of late Years, as to have almost extinguished every social Virtue; but I fear I may have incurred the Censure of many for this Digression; but, be it as it will, I could not omit it, when it so properly came in my Way; and as it is from a sincere Love and Regard to my Country, that I have mentioned this, so it may be hoped, that if any harsh Expression has been used, it will be forgiven. But to return to my Subject; As the Quantity of Land now in Tillage is very great in *England*, from the Destruction of Woods, the ploughing up of Downs, the inclosing Commons, &c. so that, unless there happens a Failure in the Crops of Corn in great Part of *England*, the Markets must be so low, that the Farmer will always find it difficult to support his Family, and pay his Rent, the first must be done, let the Landlord fare as he will, for the Farmers know, that when the Farms are occupied by the Landlords, few of them can make the Produce of the Land pay their Expence, so that the whole Rent is sunk, besides the Trouble and Fatigue of managing the Farms; and it is greatly to be feared, from the present Condition of the Farmers in general, that many Landlords will be obliged to undertake this disagreeable Affair, which will be the more so, as their Lands will be left without Stock, and the Soil exhausted, and overgrown with Weeds, which will require some Years to put into proper Condition, and will be attended with great Expence.

The extraordinary Price which Corn bore some Years since, tempted the Farmer to break up the Downs in many Parts of *England*; and the Landlords were brought to comply with the Request of the Farmer, for the Sake of a little Advance of the Rent, not considering the future Consequence of it; and hereby great Extents of

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Downs have been ruined, and not likely to be recovered again, for the Soil in many Places was not more than 4 or 5 Inches deep, upon Beds of Flints, or Chalk, which, in ploughing, were turned up on the Surface; and the little Soil which covered them, was in a few Years so much exhausted, as not to produce the Quantity of Grain which was sown upon them; and as there was no Probability of procuring Dressing for the Lands, the Farmers have been obliged to throw them up, which now lie waste, and appear like Quarries of Flints, or Beds of Chalk, without Grass, or almost any other Plant, growing upon them. By this Passion for ploughing, the Farmers have lessened their Stock of Cattle, and, of Consequence, their Quantity of Manure has been lessened in Proportion, so that they have either been obliged to purchase Dressing at a great Expence, or drain their Lands of their vegetative Quality; by the former Method, when Grain bears a low Price, the Farmer is ruined, and by the latter, every one must know what will be the Consequence to both Tenant and Landlord, therefore it is a Matter of great Concern to the Proprietors of Lands, to see that no more Ground in their Farms is kept in Tillage, than the Tenant can supply with Dressing, so as to maintain the Land in Heart, and that a proper Stock of Cattle be kept up, in Proportion to the Size of the Farms, which cannot be done where there is not a Proportion of Pasture kept to that of the arable Land in each Farm. There are many Persons, who, by a Mistake in the Article of inclosing Lands, are likely to fall into a great Error, by supposing that the inclosing of Commons will be a great Advantage to their Estates, and perhaps there may be Tenants on their Estates, who may encourage the Gentlemen so to do, from a present Interest of their own; but wherever this has been done, the Estates have soon fallen in their Rents, much lower than the Addition made by the inclosing the Commons, which must always be the Case; for if there is not common Pasture, where the Farmers can turn out their Cattle in Summer, it cannot be supposed, they can keep up a Stock of live Cattle upon their inclosed Pasture; so that, although the dividing and inclosing the Lands in the common Fields, would be a very great Benefit, yet the destroying of Pasture Commons would be a national Disadvantage and Loss. There are many other Particulars, which might be here enumerated, to shew the Cause of the low Condition of the Farmers in general; but these few Hints may probably lead some Persons of abler Heads to the Consideration of this Affair, so I shall not enlarge upon them here.

LANIGEROUS TREES are such as bear a woolly or downy Substance, as is commonly contained in the Katkins of the Willows, &c.

LANTANA. *Lin. Gen. Pl.* 683. *Camara. Plum. Nov. Gen.* 32. *Tab. 2. American Viburnum, or Camara.*

The Characters are,

The Emplacement of the Flower is cut into 4 Segments. The Flower is monopetalous, of an irregular Shape, having a cylindrical Tube, which extends beyond the Emplacement, and is spread open at the Brim, where it is divided into 5 Parts. In the Center of the Flower is situated the Pointal, supporting a crooked Stigma, attended by 4 Stamina,

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mina, 2 being longer than the other. The Pointal afterward changes to a roundish Fruit, opening into 2 Cells, and inclosing a roundish Seed.

The Species are,

1. *LANTANA foliis oppositis, caule aculeato ramoso, floribus capitato-umbellatis.* Lantana with Leaves growing opposite, a branching prickly Stalk, and umbellated Flowers growing in Heads. *Viburnum Americanum odoratum, urticae foliis latioribus spinosum, floribus miniatis.* Pluk. Alm. 285. Tab. 223. Sweet prickly American Viburnum, with broad Nettle Leaves, and Carmine Flowers.

2. *LANTANA caule inermi, foliis lanceolatis dentatis alternis, floribus corymbosis.* Lantana with a smooth Stalk, Spear-shaped indented Leaves placed alternate, and Flowers growing in round Bunches. *Periclymenum rectum, salviae foliis majoribus oblongis, mucronatis, subtus villosis, alternatim sitis, flore & fructu minoribus.* Sloan. Cat. Jam. 164. Upright Honeyfuckle with the larger, oblong, acute-pointed Sage Leaf, which is hairy on its under Side, and placed alternate, and a smaller Flower and Fruit.

3. *LANTANA caule ramoso lanuginoso, foliis orbiculatis crenatis oppositis, floribus capitatis.* Lantana with a hairy branching Stalk, round crenated Leaves placed opposite, and Flowers collected in Heads. *Periclymenum rectum, salviae folio rugoso minore, subrotundo.* Sloan. Cat. Jam. 164. Upright Honeyfuckle with a smaller rough roundish Leaf.

4. *LANTANA foliis ternis, spicis oblongis imbricatis.* Lin. Sp. Pl. 626. Lantana with Leaves placed by Threes round the Stalk, and oblong imbricated Spikes of Flowers. *Camara trifolia, purpurascens flore.* Plum. Nov. Gen. 32. Three-leaved Camara with a purplish Flower.

5. *LANTANA caule aculeato, foliis oblongo-cordatis serratis oppositis, floribus corymbosis.* Lantana with a prickly Stalk, oblong Heart-shaped sawed Leaves placed opposite, and Flowers growing in a Corymbus. *Periclymenum rectum urticae folio birsuto majore, flore flavo.* Sloan. Cat. Jam. 163. Upright Honeyfuckle with a larger Nettle Leaf, and a yellow Flower.

6. *LANTANA caule inermi, foliis ovato-lanceolatis, serratis, rugosis, floribus capitatis lanuginosis.* Lantana with a smooth Stalk, oval Spear-shaped rough sawed Leaves, and Flowers growing in woolly heads. *Periclymenum rectum, salviae folio rugoso, majore, subrotundo & bullato.* Sloan. Cat. Jam. 163. Upright Honeyfuckle with a large rough Sage Leaf, which is roundish and studded.

7. *LANTANA foliis oblongo-ovatis acuminatis serratis rugosis alternis, floribus capitatis.* Lantana with oblong oval-pointed sawed Leaves, which are rough and placed alternate, and Flowers growing in Heads. *Periclymenum rectum, salviae folio rugoso, minore, bullato, flore albo.* Sloan. Cat. 163. Upright Honeyfuckle with a smaller rough Sage Leaf, which is studded, and a white Flower.

8. *LANTANA caule inermi, foliis ovatis serratis, floribus capitatis alaribus sessilibus.* Lantana with a smooth Stalk, oval sawed Leaves, and Flowers growing in Heads, proceeding from the Wings of the Leaves and sitting close to the Stalks. *Camara foliis urticae, floribus minoribus albis, ex alis foliorum prodeuntibus.* Houff.

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Camara with a Nettle Leaf, and smaller white Flowers proceeding from the Wings of the Leaves.

9. *LANTANA foliis quaternis, caule aspero, spicis oblongis.* Four-leaved Lantana with a rough Stalk, and oblong Spike of Flowers. *Periclymenum rectum humilior, folio rugoso majore, flore purpureo, fructu oblongo, esculento purpureo.* Sloan. Cat. Jam. 164. Lower upright Honeyfuckle with a larger rough Leaf, a purple Flower, and an oblong purple esculent Fruit.

10. *LANTANA caule inermi, foliis ovato-lanceolatis oppositis, floribus capitatis pedunculis longissimis.* Lantana with a smooth Stalk, oval Spear-shaped Leaves, placed opposite, Flowers collected in Heads, and very long Foot Stalks. *Periclymenum rectum, salviae folio rugoso, longo & angustissimo.* Sloan. Cat. 164. Upright Honeyfuckle with a rough Sage Leaf, which is long and narrow.

11. *LANTANA foliis oppositis, caule inermi ramoso, floribus capitato-umbellatis.* Lin. Gen. Pl. 627. Lantana with Leaves placed opposite, a smooth branching Stalk, and umbellated Flowers collected in Heads. *Periclymenum rectum, urticae folio birsuto majore, flore miniato.* Houff. Upright Honeyfuckle with a hairy Nettle Leaf, and a Carmine Flower.

12. *LANTANA foliis alternis sessilibus, floribus solitariis.* Hort. Cliff. 320. Lantana with alternate Leaves, sitting close to the Stalks, and Flowers growing singly. *Jasminum Africanum, illicis folio, flore solitario ex foliorum alis proveniente albo.* Com. Plant. Rar. 6. Tab. 6. African Jasmine with an Ilex Leaf, and a solitary white Flower coming from the Wing of the Leaves.

The 1st Sort is pretty common in the English Gardens, where there are Collections of exotick Plants; this grows naturally in Jamaica, and most of the other Islands in the West-Indies, where it is called wild Sage. It rises with a woody Stalk, 3 or 4 Feet high, sending out many Branches, which have 4 Angles, and are armed with short crooked Spines. The Leaves are placed by Pairs opposite; they are oval, Spear-shaped, about an Inch and a Half long, and three Quarters of an Inch broad, hairy, and stand on short Foot Stalks; toward the End of the Branches the Flowers come out from the Wings of the Stalks, 2 Foot Stalks arising from the same Joint, 1 on each Side the Stalk; they are near 2 Inches long, and are terminated by roundish Heads of Flowers, those which are on the Outside, and form the Border, are first of a bright red, or scarlet Colour; these change to a deep purple before they fall. Those Flowers which are in the Center, are of a bright yellow, but after some Time fade to an Orange Colour. The Flowers are succeeded by roundish Berries, which, when ripe, turn black, having a pulpy Covering over a single hard Seed. This Plant in the West-Indies continues to flower most Part of the Year, but in England they begin to flower, and continue in Succession till near Christmas, and are sometimes succeeded by ripe Seeds.

The 2d Sort grows naturally in Jamaica; this rises with a slender, smooth, shrubby Stalk, about 4 Feet high, dividing into many small Branches which grow erect, and are garnished with Spear-shaped Leaves about 2 Inches long, and 1 broad, indented on their Edges, and hoary on their under Side, standing alternate on

short Foot Stalks. Toward the End of the Branches the Foot Stalks of the Flowers arise alternately from the Wings of the Leaves; these are very slender, and support small Heads of pale purple Flowers, which are succeeded by small purple Berries, each having 1 Seed. This flowers at the same Time with the former Sort. The Seeds of this Sort were first sent me from *La Vera Cruz*, but I have since received them from *Jamaica*.

The 3d Sort was sent me from *La Vera Cruz*, it rises with a shrubby Stalk, about 4 Feet high, dividing into several upright Branches. The Leaves are oblong, and sawed on their Edges, standing by Pairs opposite, on the lower Part of the Branches, but toward the upper Part they are placed by Threes round the Branches. The Foot Stalks of the Flowers come out from the Wings of the Leaves; they are near 3 Inches long, sustaining an oblong Spike of purple Flowers, which come out from imbricated Scales, which end in acute Points. The Flowers are succeeded by pretty large purple Berries. This flowers at the same Time with the former Sorts.

The Seeds of the 4th Sort were sent me from the *Havanna*, by the late Dr. *Houffoun*; this rises with a shrubby Stalk, about 3 Feet high, covered with a gray Bark, which is woolly. It divides into Branches by Pairs, garnished with round Leaves, indented on their Edges, whose upper Surface is corrugated and rough, like those of Sage; they are placed opposite, standing on short Foot Stalks. At the End of the Branches arise the Foot Stalks of the Flowers, which are short, and sustain a globular Head of purple Flowers; these are succeeded by pretty large purple Berries, containing 1 Seed. This flowers at the same Time with the former Sorts.

There is a Variety of this with white Flowers, whose Leaves are not quite so round, nor are they crenated on their Edges, but I suspect they both come from the same Seed, so I have not enumerated it as a distinct Species.

The 5th Sort was sent me from *La Vera Cruz*, by the late Dr. *Houffoun*; this rises with a woody branching Stalk, 4 or 5 Feet high, garnished with oblong Heart-shaped Leaves, which are sawed on their Edges, and end in acute Points. At the End of the Branches the Flowers come out in round Bunches, standing on slender upright Foot Stalks, about 1 Inch long. The Flowers are yellow, and grow in looser Bunches, or Heads, than those of the former Sorts, but flowers at the same Time.

The 6th Sort rises with a woody branching Stalk, 5 or 6 Feet high, covered with a dark brown Bark. The Branches are more divided than those of most other Sorts, and are much more ligneous. The Leaves are 2 Inches and a Half long, and 1 and a Quarter broad, deeply sawed on their Edges, and their upper Surface very rough, and many of them closely set with white prominent Spots as if studded; these are placed alternately on the Branches. The Flowers come out from the Wings of the Stalk, standing on pretty long Foot Stalks; they are white, and collected in small woolly Heads. This flowers about the same Time with the former Sorts.

The 7th Sort rises with a branching shrubby Stalk, about 4 Feet high, covered with a dark brown Bark,

and garnished with small, oblong, oval Leaves, ending in acute Points; they are 1 Inch long, and half an Inch broad, very much veined on their upper Side, standing alternately pretty close to the Branches. The Flowers come out at the End of the Branches, on short Foot Stalks in close small Heads; these are white, and make but little Appearance. It flowers at the same Time with the former.

The 8th Sort was sent me by the late Dr. *Houffoun*, from *Campeachy*; this hath a slender shrubby Stalk, which rises 3 or 4 Feet high, dividing into many slender, smooth, square Branches, garnished with small oval sawed Leaves, placed opposite; from the Wings of the Stalk, at every Joint, come out the Flowers; they are small, white, and collected in close Heads; these come out by Pairs opposite, and sit close to the Branches. This flowers at the same Time with the former.

The 9th Sort is annual; this was first sent me from *La Vera Cruz*, but I have since received the Seeds from the North Side of the Island of *Jamaica*; this rises with a strong upright rough Stalk, near 3 Feet high, dividing into 2 or 3 erect Branches, garnished with oblong, oval, sawed Leaves, ending in acute Points; they are placed by Fours at each Joint, and are a little woolly on their under Side. The Flower Stalks arise by Pairs, and sometimes 3 come out at the same Joint; they are from 2 to 3 Inches long, and sustain a thick Spike of large purple Flowers, which are succeeded by large purple Berries, which are very succulent, and are frequently eaten by the Inhabitants. This Sort will flower in *July*, provided the Plants are raised early in Spring, and brought forward; and the Seeds will ripen in Autumn, soon after which the Plants decay.

The 10th Sort grows naturally in *Jamaica*, from whence the late Dr. *Houffoun* sent me the Seeds; this rises with a slender, smooth, branching Stalk, 3 Feet high. The Branches are garnished with oval Spear-shaped Leaves, 2 Inches long, and 1 broad; they are crenated on their Edges, and rough on their upper Side, standing by Pairs opposite, on very short Foot Stalks. The Flowers come out from the Wings of the Stalk, on very long Foot Stalks; they are placed by Pairs opposite, the whole Length of the young Branches, sustaining small round Heads of white Flowers; these appear at the same Time with the other Sorts, but rarely produce Seeds in *England*.

The 11th Sort was sent me from *Jamaica* by the late Dr. *Houffoun*; this rises with a shrubby Stalk 5 or 6 Feet high, dividing into many strong Branches, pretty closely garnished with oval, pointed, crenated Leaves, placed opposite; they are about an Inch and a Half long, and as much broad at their Base, but draw to a Point at the Top, rough on their upper Side. The Flowers come out from the Wings of the Leaves on each side the Branches, standing on pretty long Foot Stalks; they are of a Carmine Colour, and grow in umbellated Heads. This flowers at the same Time with the former Sorts, but rarely produces Seeds in *England*.

These Plants are all of them easily propagated by Cuttings except the 9th, which is an annual Plant, so can only be propagated by Seeds. They may also be propagated by Seeds, which several of the Sorts produce in *England*, and the others may be easily procured from the

the *West-Indies*, where there are a greater Variety of these Plants growing naturally, than are at present known in *Europe*; they are all of them called Wild Sage, by the Inhabitants of the *British* Islands, but they do not distinguish the Sorts. These Seeds should be sown in Pots filled with light Earth, and plunged into a hot Bed of Tan; the Reason for my advising them to be sown in Pots, is, because the Seeds frequently remain long in the Ground before they vegetate; therefore if the Plants should not come up the same Year, the Pots should be placed in the Stove in Winter, and the following Spring plunged into a new hot Bed, which will bring up the Plants. When these are fit to remove, they should be each planted in a small Pot and plunged into another hot Bed, observing to shade them till they have taken new Root; then they should have Air admitted to them every Day, in Proportion to the Warmth of the Season, to prevent their being drawn up with weak Stalks; afterward they must be treated as other Plants from the same Country, till they have obtained Strength; then they may be removed into an airy Glass Case, or a dry Stove, where they may have a large Share of Air in warm Weather, but protected from the Cold. This is necessary for the young Plants, which should not the first Year be exposed to the open Air, but afterward they may be placed abroad in the warmest Part of Summer, and in Winter placed on Stands in the dry Stove, where they will continue long in flower, and many of the Sorts will ripen their Seeds; but in Winter they should be sparingly watered, for much Moisture will rot their Roots.

If they are propagated by Cuttings, the best Time for planting them is in *July*, after the Plants have been exposed to the open Air for about a Month, by which Time the Shoots will be hardened so as to be out of Danger of rotting with a little Moisture. These Cuttings should be planted in small Pots filled with light Earth, and plunged into a moderate hot Bed; and if they are screened from the Violence of the Sun in the Middle of the Day, they will be rooted in about 6 Weeks Time, when they must be hardened gradually to bear the open Air, and afterward treated as the old Plants.

The last Sort has been long in the *English* Gardens, and is commonly called the Ilex-leaved Jasmine. This Sort rises with a shrubby Stalk 5 or 6 Feet high, sending out many irregular Branches, closely garnished with thin oval Leaves ending in Points, and sawed on their Edges; these embrace the Branches with their Base, and from the Bosom of each Leaf comes out 1 solitary white Flower, cut at the Top into 5 Parts, and at first Sight has the Appearance of a Jasmine Flower, but when closer viewed, the Tube will be found curved in the same Manner with those which Dr. *Linnaeus* titles ringent Flowers. The Flowers are not succeeded by Seeds in *England*, but the Plants are easily propagated by Cuttings, which, if planted on an old hot Bed any Time in *July*, and covered with a Bell or Hand Glass, and shaded from the Sun, will put out Roots in a Month or five Weeks; then they may be planted in Pots, and placed in the Shade till they have taken fresh Root, after which they may be removed to a sheltered Situation, where they may remain till the

Frosts come on. This Plant was brought from the *Cape of Good Hope*, so is not very tender, therefore may be preserved in a good Green-house in Winter; but during that Season it must have a large Share of Air in mild Weather, otherwise it is apt to grow mouldy, and this will cause the tender Branches to decay. In the Summer Season it may be exposed in the open Air, with other Green-house Plants, in a sheltered Situation, where it will add to the Variety; and although the Flowers are small, and are produced singly from between the Leaves, so do not make any great Appearance, yet as there is a Succession of these Flowers most Part of the Year, and the Leaves continue green throughout the Year, it is worthy of a Place in every Collection of Plants.

LANUGINOUS, signifies downy, or to be covered with a soft Down, as a Quince.

LAPATHUM. See Rumex.

LAPSANA. *Lin. Gen. Pl.* 823. *Lämpfana* & *Rbagadiolus*. *Tourn. Inst. R. H.* 479. *Tab.* 272. Nipplewort.

The Characters are,

The Flower is composed of several hermaphrodite Florets, included in one common imbricated Empalement. The Florets have 1 Petal, tubulous and stretched out at the Top, in shape of a Tongue; these have each 5 short hairy Stamina, terminated by cylindrical Summits. The Germen is situated at the Bottom of the Floret, supporting a slender Style, crowned by a reflexed bifid Stigma; the Germen becomes an oblong three cornered Seed, situated in the Scale of the Empalement.

The Species are,

1. LAPSANA calycibus fructibus angulatis, pedunculis tenuibus ramosissimis. *Hort. Cliff.* 384. Nipplewort with angular Empalements to the Fruit, and very narrow branching Foot Stalks. *Lämpfana*. *Dod.* p. 675. Common Nipplewort.

2. LAPSANA calycibus fructibus undique patentibus, radiis subulatis, foliis lanceolatis indivisis. *Hort. Upf.* 245. Nipplewort with Empalements to the Fruit, spreading open every Way, Awl-shaped Rays, and Spear-shaped undivided Leaves. *Rbagadiolus alter*. *Cæsalp.* 511. Another *Rbagadiolus*.

3. LAPSANA calycibus fructibus undique patentibus, radiis subulatis, foliis lyratis. *Hort. Upf.* 245. Nipplewort with Empalements to the Fruit spreading open every Way, Awl-shaped Rays, and Harp-shaped Leaves. *Rbagadiolus Lämpfane foliis*. *Tourn. Cor.* 36. *Rbagadiolus* with a Nipplewort Leaf.

4. LAPSANA calycibus fructibus torulosis depressis obtusis sessilibus. *Lin. Sp. Pl.* 811. Nipplewort with a depressed knotted Empalement which is obtuse, and fits close to the Branches. *Zacantha* sive *cichorium verrucarium*. *Tourn. Inst.* 476. *Zacantha*, or warted Cichory.

The 1st Sort is a common Weed, which grows by the Side of Foot Paths and Hedges in most Parts of *England*, so is not permitted to have Room in Gardens.

The 2d and 3d Sorts grow naturally in *Portugal*, from whence I have received their Seeds. These are annual Plants, of no Beauty or Use, but are preserved in Botanick Gardens for Variety. If the Seeds of these are permitted to scatter, the Plants will come up with-

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out Trouble, and 2 or 3 of them will be enough to leave to keep the Sorts.

The 4th Sort grows naturally in *Italy*; this is also an annual Plant, of neither Use or Beauty, but is like the others kept for Variety. If the Seeds of this Sort scatter in the Autumn, the Plants will come up better than if sown in the Spring. The Plants require no Culture, but will thrive like Weeds.

LARIX. Tourn. Inst. R. H. 586. Tab. 353. Pinus. Lin. Gen. Pl. 956. The Larch Tree; in French, *Melise*.

The Characters are,

It hath male and female Flowers growing separate on the same Tree. The male Flowers are disposed in a scaly Katkin, these have no Petal, but a great Number of Stamina connected in a Column below, but separated at their Points, and terminated by erect Summits. The female Flowers are disposed in a conical Shape, having no Petals; these are placed by Pairs under each Scale, having a small Germen, supporting an Awl-shaped Style, crowned by a single Stigma. The Germen becomes a Nut with a membranous Wing, inclosed in the Scales of the Cones.

The Species are,

1. LARIX foliis deciduis, conis ovatis obtusis. Larch Tree with deciduous Leaves, and oval obtuse Cones. *Larix folio deciduo, conifera*. J. B. 1. p. 265. Common Cone-bearing Larch Tree.

2. LARIX foliis deciduis, conis mucronatis squamis acutis. Larch Tree with deciduous Leaves, and pointed Cones having acute Scales.

3. LARIX foliis acutis perennantibus, conis obtusis. Larch Tree with acute ever-green Leaves and obtuse Cones. *Cedrus conifera, foliis laricis*. C. B. P. 490. Cone-bearing Cedar with a Larch Leaf, or the Cedar of Lebanon.

The 1st Sort grows naturally on the Alps and Appennines, and of late Years has been very much propagated in England. This Tree is of quick Growth, and will rise to the Height of 50 Feet; the Branches are slender, and their Ends generally hang downward. These are garnished with long narrow Leaves, which arise in Clusters from one Point, and spread open above like the Hairs of a Painter's Brush; they are of a light green, and fall away in Autumn, like other deciduous Trees. In the Month of April the male Flowers appear, which are disposed in Form of small Cones; the female Flowers are collected into oval obtuse Cones, which in some Species have bright purple Tops, and in others they are white: These Differences are accidental, for I have found the Seeds taken from either of these Varieties, will produce Plants of both Sorts; the Cones are about 1 Inch long, obtuse at their Points, and the Scales lie over each, smooth; under each Scale there is generally lodged 2 Seeds, which have Wings.

There are 2 other Varieties of this Tree, one of which is a Native of America, and the other of Siberia; the latter requires a colder Climate than England, for they are very apt to die in Summer here, especially if planted on a dry Soil. The Cones of this Sort which have been brought to England, seem to be in general larger than those of the common Kind; but there is so little Difference between the Trees in their characteristic Notes, as not to be distinguished as distinct Species, though by the Growth of the Trees there is a remarkable Difference.

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The Cones of the second Sort were sent from China, to the Right Hon. the Earl of Northumberland, who was so good as to communicate some of the Seeds to me, which were sown in the Chelsea Garden, where they succeeded, as they also did in his Lordship's Garden at Stanwick. The Cones of this Sort were much larger than those of the common Sort, and ended in acute Points; the Scales were prominent like those of the Scotch Pine, and had so little Resemblance to those of the Larch, that every one who saw them, imagined they were a Sort of Pine; they were titled, Fir good to keep up Banks. As these Plants made but little Progress the first Year, so were weak, and in the Autumn casting off their Leaves, they were supposed to be dead, and most of the Plants were thereby lost; but those which escaped, afterward shot their Branches out horizontally, spreading close to the Ground, and by their present Appearance, seem to be a Shrub which never will rise upright. This Sort is so hardy, as to thrive in the open Air without any Protection.

The common Larch is now very plenty in most of the Nurseries in England, and of late Years there has been great Numbers of the Trees planted; but those which have been planted in the worst Soil and in bad Situations, have thriven the best; for where Trees of equal Size have been planted in good Garden Earth at the same Time, the others on the cold stiff Land, have in 12 Years been twice the Height of those planted in good Ground; which is an Encouragement to plant these Trees, since they will thrive in the most exposed Situations, provided they are planted in Clumps near each other, and not single Trees; nor should the Plants which are planted in very open exposed Places, be taken from warm Nurseries, but rather raised as near to the Spot where they are to remain, as possible; nor should the Plants be more than 3 or 4 Years Growth when planted, where they are designed to grow large; for though Trees of greater Size will remove very well, and grow several Years as well as if they had not been transplanted, yet after 20 or 30 Years Growth, they will frequently fail, where the young planted Trees have continued very vigorous.

These Trees are raised from Seeds, which most Years ripen well in England: The Cones should be gathered about the End of November, and kept in a dry Place till the Spring, when they should be spread on a Cloth and exposed to the Sun, or laid before a Fire, which will cause the Scales of the Cones to open, and emit their Seeds. These Seeds should be sown on a Border exposed to the East, where the Morning Sun only comes on it; or if they are sown on a Bed more exposed to the Sun, they should be screened with Mats, from the Sun in the Middle of the Day; for when the Plants first appear above Ground, they are very impatient of Heat; and when the Bed is much exposed to the Sun, the Surface of the Ground will dry so fast, as to require to have Water very often, which frequently rots the tender Stems of the Plants, which will be prevented by properly shading them while young, and afterward they will be in no Danger. These young Plants should be constantly kept clean from Weeds, and if they have made good Progress, they may be transplanted the following Autumn, otherwise they may remain

in the Seed Bed another Year, especially if the Plants are not too close together. When they are transplanted, it should be performed in the Autumn, as soon as their Leaves decay; they may be planted in Beds at about 6 Inches asunder each Way, which will be Distance enough for the Growth of the Plants the two following Years, by which Time they will be fit to transplant where they are to remain.

When the young Trees are planted out for good, they need not be more than 8 or 10 Feet distant from each other, always planting them closer on exposed Situations, than where they are more defended; after the Trees are planted, they will require no other Care but to keep them clean from Weeds for 3 or 4 Years till the Trees have obtained Strength, when they will over-top the Weeds, and prevent their Growth; but the Ground between these Trees should not be dug, for that I have found has greatly stopped their Growth.

The *Siberian Larch* is of slow Growth in this Country, and when the Spring is mild, the Trees will begin to shoot early in *March*; and there are frequently sharp Frosts after these Shoots are killed, and this stops the Growth of the Trees. Likewise when they are planted on a warm dry Soil, they are frequently killed by Drought in the Summer; therefore this is a very improper Tree for this Country, unless for some cold, moist, peaty Land, where they may probably thrive, and in such Situations few other Trees will grow.

The *American* or black Larch, thrives pretty well upon moist Land, but on dry Ground will make but little Progress. A few of these Trees by way of Variety, may be allowed to have Place in every Collection of Trees designed for Pleasure, but for Profit the common Larch is to be preferred.

In *Switzerland*, where these Trees abound, and they have a Scarcity of other Wood, they build most of their Houses with it; and great Part of their Furniture is also made of the Wood, some of which is white, and some red, but the latter is most esteemed. The Redness of the Wood is supposed to be from the Age of the Trees, and is not from any Difference between them. They frequently cut out the Boards into Shingles of a Foot square, with which they cover their Houses, instead of Tiles or other Covering; these are at first very white, but after they have been two or three Years exposed, become as black as Charcoal; and all the Joints are stopped by the Resin, which the Sun draws out from the Pores of the Wood, which is hardened by the Air, and becomes a smooth shining Varnish, which renders the Houses so covered impenetrable to either Wind or Rain; but as this is very combustible, so the Magistrates have made an Order of Police, that the Houses should be built at a Distance from each other.

In most Countries where this Wood is in Plenty, it is preferred to all the Kinds of Fir, for every Purpose; and in many Places there are Ships built of this Wood, which they say are durable; therefore this may be a very proper Tree for planting on some of the cold barren Hills in many Parts of *England*, which at present produce nothing to their Proprietors, and in one Age may be large Estates to their Posterity and a national Advantage; which might be effected without a great Expence, where the Business is properly conducted.

The best Method for doing this, would be by making small Nurseries on or near the Place where the Plantation is intended to be made, in those Nurseries the Seeds should be sown; and if there are any poor Cottagers there, these may be employed in raising the Plants, keeping them clean, and afterward in transplanting them. This will lessen the Number of indigent Poor, and by employing them in this Sort of Husbandry, they may be brought to have a Love and Regard for Trees of their own planting, so will not be tempted to destroy them themselves, or suffer others to do it; and as the Season for planting happens at a Time of Year, when the Farmers have little Employment for their Labourers, the finding them useful Employment this Way, will be infinitely more Advantageous than giving them Alms from the Parish; and the Children may be taught to weed and keep the young Plants clean in Summer, whereby they may be rendered useful, and kept from being burdensome to the Parishes.

From the Larch Tree is extracted the *Venice Turpentine*, which the Inhabitants of the Valley of *St. Martin* near *Lucern*, make a considerable Merchandize of. They collect this by boring Holes in the Trunk of the Trees, at about 2 or 3 Feet from the Ground, into which they fix narrow Troughs about 20 Inches long; the Ends of these are hollowed like a Ladle, and in the Middle is a small Hole bored for the Turpentine to run into a Receiver, which is placed below it; as the Turpentine runs from the Trees, it passes along the sloping Gutter or Trough to the Ladle, and from thence runs through the Hole into the Receiver. The People who gather this visit the Trees Morning and Evening, from the End of *May* to *September*, to collect the Turpentine from out of the Receivers.

The 3d Sort is the Cedar of *Libanus*, which is a Tree of great Antiquity; and what is remarkable, this Tree is not found as a Native in any other Part of the World, so far as hath come to our Knowledge.

The Cones of this Tree are frequently brought from the *Levant*, which, if preserved entire, will preserve their Seeds good for several Years. The Time of their ripening is commonly in the Spring, and so consequently are near one Year old before we receive them; for which they are not the worse, but rather the better, the Cones having discharged a great Part of their Resin by lying, and the Seeds are much easier to get out of them than such as are fresh taken from the Tree.

The best Way to get the Seeds out is, to split the Cones, by driving a sharp Piece of Iron through the Center Lengthways, which will split the Cone; then you may pull the Seeds out with your Fingers, which you will find are fastened to a thin leafy Substance called Wings, as are those of the *Fir Tree*: But before the Seeds are taken out, it will be proper to put the Cones in Water for 24 Hours, which will render them easier to split, so that the Seeds may be taken out with greater Safety; for there will require Care in the doing it, otherwise many of the Seeds will be spoiled, for they are very tender, and will bruise where there is any Force employed to get them out.

These Seeds should be sown in Boxes or Pots of light fresh Earth, and treated as was directed for the *Fir* (to which I refer the Reader) but only shall observe, that these

these require more Shade in Summer than the Firra, and should be frequently refreshed with Water.

When the Plants come up, they must be guarded from the Birds, otherwise they will pick off their Tops; they must also be constantly kept clean from Weeds, and not placed under the Drip of Trees. The Plants may remain in these Boxes or Pots in which they were sown till the following Spring, but it will be proper to place them under a Frame in Winter, or cover them with Mats, for while they are young they are in Danger of losing their Tops, if they are pinched by Frost. In the Spring before the Plants begin to shoot, they should be carefully taken up and transplanted into Beds at about 4 Inches Distance, closing the Earth gently to their Roots; these Beds should be arched over with Hoops, and covered with Mats in the Heat of the Day, to shade the Plants from the Sun till they have taken new Root; and if the Nights prove frosty, it will be proper to keep the Mats over them in the Night, but in cloudy or moist Weather they must be always open. After the Plants are well rooted, they will require no other Care but to keep them clean from Weeds, unless the Season should prove very dry, in which Case it will be proper to give them some Water once a Week; but it must be but in small Quantities, for too much Wet is often very injurious to them, so that it will be better to screen them from the Sun in hot Weather, to prevent the Earth from drying too fast, or cover the Surface of the Ground with Moss to keep it cool, than to water the Plants often.

In these Beds the Plants may stand 2 Years, then they should be either transplanted to the Places where they are designed to remain, or to a Nursery, where they may grow two Years more; but the younger these Plants are when they are planted out for good, the better the Trees will thrive, and the longer they will continue.

When these Plants begin to shoot strong, you will generally find the leading Shoot incline to one Side; therefore, if you intend to have them strait, you must support them with Stakes, observing to keep the Leader always close tied up, until you have gotten them to the Height you design them, otherwise their Branches will extend on every Side, and prevent their growing tall.

These Trees are by many People kept in Pyramids, and sheared as Yews, &c. in which Form they lose their greatest Beauty; for the Extension of the Branches is very singular in this Tree, the Ends of their Shoots, for the most Part declining, and thereby shewing their upper Surface, which is constantly clothed with green Leaves in so regular a Manner, as to appear at some Distance, like a green Carpet; and these waving about with the Wind, make one of the most agreeable Prospects that can be to terminate a Vista, especially if planted on a rising Ground.

It is Matter of Surprize to me, that this Tree hath not been more cultivated in England formerly, for till within a few Years past, there were but few here, since it would be a great Ornament to barren bleak Mountains, where few other Trees would grow, it being a Native of the coldest Parts of Mount Libanus, where the Snow continues most Part of the Year. And from the Observations I have made of those now growing in

England, I find they thrive best on the poorest Soil; for such of them as have been planted in a strong rich loamy Earth, have made but a poor Progress, in Comparison to such as have grown on a stony meagre Soil. And that these Trees are of quick Growth, is evident from 4 of them now growing in the Physick Garden at Chelfea, which (as I have been credibly informed) were planted there in the Year 1683, and at that Time were not above 3 Feet high; 2 of which Trees are at this Time (*viz.* 1757) upwards of 11 Feet and a Half in Girt, at 2 Feet above Ground, and their Branches extend more than 20 Feet on every Side their Trunks; which Branches (though they are produced 12 or 14 Feet above the Surface) do at every Termination hang very near the Ground, and thereby afford a goodly Shade in the hottest Season of the Year.

The Soil in which these Trees are planted, is a lean hungry Sand, mixed with Gravel, the Surface of which is scarcely two Feet deep before a hard rocky Gravel appears. These Trees stand at 4 Corners of a Pond, which is bricked up within 2 Feet of their Trunks, so that their Roots have no Room to spread on one Side, and consequently are cramped in their Growth; but whether their standing so near the Water may not have been advantageous to them, I cannot say, but sure I am, if their Roots had had full Scope in the Ground, they would have made a greater Progress. I have also observed, that lopping or cutting these Trees is very injurious to them (more, perhaps, than to any other of the resinous Trees) in retarding their Growth; for two of the four Trees above-mentioned, being unadvisedly planted near a Green-house, when they began to grow large, had their Branches lopped, to let the Rays of the Sun into the House, whereby they have been so much checked, as at present to be little more than half the Size of the other two.

These Trees have all of them produced, for several Years, large Quantities of Katkins (or male Flowers,) though there are but three of them which have as yet produced Cones; nor is it above 25 Years, that these have ripened their Cones, so as to perfect the Seed; but now the Seeds which fall out of the Cones produce Plants, which come up naturally without Care: And since we find, that they are so far naturalized to our Country as to produce ripe Seeds, we need not fear being soon supplied with enough, without depending on those Cones which are brought from the *Levant*, as there are many Trees of this Kind in England, which in a few Years must certainly bear: But I find they are more subject to produce and ripen their Cones in hard Winters, than in mild ones; which is a plain Indication, that they will succeed, even in the coldest Parts of Scotland, where, as well as in England, they might be propagated to great Advantage.

What we find mentioned in Scripture of the lofty Cedars, can be no Ways applicable to the Stature of this Tree; since, from the Experience we have of those now growing in England, as also from the Testimony of several Travellers, who have visited those few remaining Trees on Mount Libanus, they are not inclined to grow very lofty, but, on the contrary, extend their Branches very far; to which the Allusion made by the Psalmist agrees

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agrees very well, when he is describing the flourishing State of a People, and says, *They shall spread their Branches like the Cedar Tree.*

Rauwolf, in his Travels, says, there were not at that Time (*i. e.* Anno 1574) upon Mount *Libanus* more than 26 Trees remaining, 24 of which stood in a Circle; and the other two, which stood at a small Distance, had their Branches almost consumed with Age; nor could he find any younger Trees coming up to succeed them, though he looked about diligently for some. These Trees (he says) were growing at the Foot of a small Hill, on the Top of the Mountains, and amongst the Snow. These having very large Branches, commonly bend the Tree to one Side, but are extended to a great Length, and in so delicate and pleasant Order, as if they were trimmed and made even with great Diligence, by which they are easily distinguished at a great Distance from Fir Trees. The Leaves (continues he) are very like to those of the Larch Tree, growing close together in little Bunches, upon small brown Shoots.

Maunderel, in his Travels, says, there were but sixteen large Trees remaining, when he visited the Mountains, some of which were of a prodigious Bulk, but that there were many more young Trees of a smaller Size; he measured one of the largest, and found it to be 12 Yards 6 Inches in Girth, and yet sound, and 37 Yards in the Spread of its Boughs. At about five or six Yards from the Ground it was divided into five Limbs, each of which was equal to a great Tree. What *Maunderel* hath related, was confirmed to me by a worthy Gentleman of my Acquaintance, who was there in the Year 1720, with this Difference only, *viz.* in the Dimensions of the Branches of the largest Tree, which he assured me he measured, and found to be twenty-two Yards Diameter. Now, whether Mr. *Maunderel* meant thirty-seven Yards in Circumference of the spreading Branches, or the Diameter of them, cannot be determined by his Expressions, yet neither of them well agrees with my Friend's Account.

Monsieur *Le Brun* reckons about 35 or 36 Trees remaining upon Mount *Libanus*, when he was there, and would persuade us it was not easy to reckon their Numbers (as is reported of our *Stonehenge* on *Salisbury Plain*). He also says, their Cones do some of them grow dependent. Which is abundantly confuted by the above-mentioned Travellers, as also from our own Experience, for all the Cones grow upon the upper Part of the Branches, and stand erect, having a strong woody central Style, by which it is firmly annexed to the Branch, so as with Difficulty to be taken off; which central Style remains upon the Branches after the Cone is fallen to Pieces, so that they never drop off whole, as the Pines do.

The Wood of this famous Tree is accounted Proof against all Putrefaction of animal Bodies; the Saw Dust of it is thought to be one of the Secrets used by those Mountebanks, who pretend to have the embalming Mystery. This Wood is also said to yield an Oil, which is famous for preserving Books and Writings; and the Wood is thought by my Lord *Bacon*, to continue above a thousand Years sound. It is also recorded, that in the Temple of *Apollo* at *Utica*, there was found Timber of near two thousand Years old. And the Statue of the Goddess, in the famous *Ephesian* Temple, was said to be

of this Material also, as was most of the Timber Work of that glorious Structure.

This Sort of Timber is very dry and subject to split, nor does it well endure to be fastened with Nails, from which it usually shrinks, therefore Pins of the same Wood are much preferable.

LARKSPUR. See *Delphinium*.

LASERPITIUM. *Tourn. Inst. R. H.* 324. *Tab.* 172. *Lin. Gen. Pl.* 306. Laserwort.

The Characters are,

It hath an umbellated Flower, composed of many small Umbels; both the small and principal Umbels, have a many leaved Involuerum. The general Umbel is uniform, the Flowers have 5 equal Petals, whose Points are Heart-shaped and inflexed; they have 5 Stamina which are as long as the Petals, terminated by single Summits; the roundish Germen is situated under the Flower, supporting two thick acuminate Styles, crowned by obtuse spreading Stigmas. The Germen afterward becomes an oblong Fruit with 8 longitudinal Wings or Membranes, resembling the Fliers of a Water Mill; the Fruit divides into 2 Parts, each containing 1 Seed.

The Species are,

1. LASERPITIUM *foliolis oblongo-cordatis, inciso-serratis, umbellâ maximâ.* Laserwort with oblong Heart-shaped Lobes, cut like a Saw, and a very large Umbel. *Laserpitium foliis latioribus lobatis. Mor. Umbel.* 29. Laserwort with broader Leaves, having Lobes.

2. LASERPITIUM *foliolis cordatis inciso-serratis. Hort. Cliff.* 96. Laserwort with Heart-shaped Lobes cut like a Saw. *Laserpitium foliis amplioribus, semine crispo. Inst. R. H.* 324. Laserwort with large Leaves and curled Seeds.

3. LASERPITIUM *foliolis ovatis obtusis acutè serratis.* Laserwort with oval obtuse Lobes, sharply sawed. *Laserpitium humilius, paludarii folio, flore albo. Inst. R. H.* Lower Laserwort with a Smallage Leaf, and a white Flower.

4. LASERPITIUM *foliolis cuneiformibus furcatis. Lin. Sp. Pl.* 248. Laserwort with Wedge-shaped forked Lobes. *Laserpitium Gallicum. 156. C. B. P.* French Laserwort.

5. LASERPITIUM *foliolis lanceolatis integerrimis sessilibus. Hort. Cliff.* 96. Laserwort with Spear-shaped entire Leaves, sitting close to the Branches. *Laserpitium angustissimo & oblongo folio. Inst. R. H.* 324. Laserwort with a very narrow oblong Leaf.

6. LASERPITIUM *foliolis trifidis acutis.* Laserwort with acute trifid Lobes. *Laserpitium selinoides, semine crispo. Inst. R. H.* Laserwort resembling sweet Smallage, with a curled Seed.

7. LASERPITIUM *foliolis trifidis obtusis, umbellis partialibus contractis.* Laserwort with obtuse trifid Leaves, and the small Umbels contracted. *Laserpitium angustifolium, umbellâ contractâ & concavâ. Inst. R. H.* Narrow-leaved Laserwort, with a contracted and hollow Umbel.

8. LASERPITIUM *foliolis lanceolatis integerrimis extimis coalitis. Hort. Cliff.* 96. Laserwort with entire Spear-shaped Lobes, whose outer ones coalesce.

9. LASERPITIUM *foliolis pinnatifidis, caule anguloso.* Laserwort with Wing-pointed Lobes, and an angular Stalk. *Laserpitium daucoides prutenicum viscoso semine.*

Breyn.

Breyn. Cent. 167. Laferwort like the wild Carrot, with a viscous Seed.

There are some other Varieties, if not distinct Species of this Plant; there are some which have been put down as distinct Species, which differ only in the Colour of their Flowers, therefore should not be regarded as such, but the Number of Species has been greatly lessened by some late Writers, who have erred as much in lessening, as those before them had done in multiplying the Species, which mistake they may have fallen into by sowing the Seeds near old Plants of the same Genus, or on Ground where some of these Sorts have grown, so that their Seeds have been scattered and buried in the Ground, where they will remain 2 or 3 Years, and afterward grow; so that unless their Seeds are sown at a Distance from any of the other Species, there will commonly some other Species come up, whereby People have been often confused in distinguishing these Plants; nay I have frequently observed the Seeds of one Species fall, and the Plants come up on the Head of another Plant which grew near it, and this young Plant, if not timely rooted out has gotten the better of the old Plant, and destroyed it; therefore where there is not great Care taken to prevent this, the different Sorts cannot be preserved in Gardens where the Species grow near each other.

These Plants grow naturally in the South of France, in Italy, and Germany, and are preserved in Botanick Gardens for Variety, but as they have no great Beauty, so are seldom cultivated in other Gardens; they require much Room, for their Roots extend far every Way, and the Leaves of many Sorts will spread 3 Feet, when the Plants are strong; their Flower Stalks rise 4 or 5 Feet high, and their Umbels of Flowers are very large; they have all of them perennial Roots but annual Stalks. They flower in June, and the Seeds ripen in September.

It is generally supposed, that the *Silphium* of the Ancients was procured from one Species of this Genus, but from which of them we are at present ignorant. All the Species, if wounded, drop a very acrid Juice, which turns to a resinous gummy Substance, very acrimonious. This was externally applied by the Ancients to take away black and blue Spots that came by Bruises and Blows, as also to take away Excrescences; it was also by some of the Ancients prescribed in internal Medicines, but others have cautioned People not to make use of it this Way, from the Effects which they mention to have been produced from the Violence of its Acrimony.

All these Plants are extreme hardy, so will thrive in most Soils and Situations; they are propagated by Seed, which if sown in Autumn, will come up the following Spring, but when they are sown in the Spring, the Seeds commonly remain in the Ground a whole Year. The Plants should be transplanted the following Autumn, where they are designed to remain, for they send out long deep Roots, which are frequently broken by transplanting, if they are large; when the Plants are removed, they should be planted 3 Feet asunder, for they grow very large; they decay to the Ground every Autumn, and come up again the following Spring, but the Roots will continue many Years, and require no other Culture,

but to clear them from Weeds, and to dig between the Roots every Spring.

LATHYRUS. *Tourn. Inst. R. H.* 394. *Tab.* 216 217. *Lin. Gen. Pl.* 781. Chichling Vetch; in French, *Gesse*.

The Characters are,

The Flower has a Bell-shaped Empalement of 1 Leaf, cut into 5 Parts at the Top, the 2 upper being short, and the under longer. The Flower is of the Butterfly Kind. The Standard is Heart-shaped, and large, and reflexed at the Point. The Wings are oblong and blunt; the Keel is half round, and the Size of the Wings. It hath 10 Stamina, 9 of them joined, and 1 separate, crowned by roundish Summits. It hath an oblong, narrow, compressed Germen, supporting a rising Stile, which is flat, and the upper Part broad, with an acute Point, crowned by a hairy Stigma. The Germen afterward becomes a long compressed Pod, ending in a Point, having 2 Valves, and filled with roundish Seeds.

The Species are,

1. LATHYRUS *pedunculis unifloris, cirrbis diphyllis, leguminibus ovatis compressis dorso bimarginatis. Hort. Cliff.* 367. Chichling Vetch with 1 Flower on a Foot Stalk, Tendrils having 2 Leaves, and oval compressed Pods with 2 Borders on their back Part. *Lathyrus annuus, flore caeruleo, Ochri siliqua. H. L.* Annual Chichling Vetch with a blue Flower, and a Pod like *Ochrus*.

2. LATHYRUS *pedunculis unifloris, cirrbis diphyllis, leguminibus ovatis compressis, dorso canaliculatis. Lin. Sp. Pl.* 730. Chichling Vetch with 1 Flower on a Foot Stalk, 2 leaved Tendrils, and an oval compressed Pod, a little channelled on the Back. *Lathyrus sativus flore purpureo. C. B. P.* 344. Cultivated Chichling Vetch with a purple Flower.

3. LATHYRUS *pedunculis unifloris, cirrbis diphyllis, leguminibus teretibus. Chichling Vetch with 1 Flower on a Foot Stalk, a two leaved Tendril, and a taper Pod. Lathyrus foliis angustis, floribus singularibus coccineis. Seg. Pl. Veron.* Chichling Vetch with narrow Leaves, and single scarlet Flowers.

4. LATHYRUS *pedunculis unifloris, cirrbis tetraphyllis, stipulis dentatis. Flor. Leyd. Prod.* 363. Chichling Vetch with 1 Flower on a Foot Stalk, a 4 leaved Tendril, and indented Stipulæ. *Glymenum Bitbynicum siliqua singulari, flore minore caeruleo, Boerb. Ind. alt.* 2. p. 43. Bitbynian Chichling Vetch with a single Pod, and a small blue Flower.

5. LATHYRUS *pedunculis unifloris, cirrbis polyphyllis, stipulis lanceolatis. Hort. Cliff.* 368. Chichling Vetch with 1 Flower on a Foot Stalk, a many leaved Tendril, and Spear-shaped Stipulæ. *Glymenum Parisiense flore caeruleo. Tourn. Inst. R. H.* 396. Chichling Vetch of Paris with a blue Flower.

6. LATHYRUS *pedunculis bifloris, cirrbis polyphyllis, foliolis alternis. Hort. Cliff.* 368. Chichling Vetch with 2 Flowers on a Foot Stalk, a many leaved Tendril, and the Lobes placed alternate. *Glymenum Hispanicum, flore vario siliqua articulata. Tourn. Inst. R. H.* 296. Spanish Chichling Vetch with a variable Flower, and jointed Pod.

7. LATHYRUS *pedunculis bifloris, cirrbis diphyllis, foliis ovato-oblongis, leguminibus birsutis. Hort. Cliff.* 368. Chichling

Chichling Vetch with 2 Flowers on a Foot Stalk, a two leaved Tendril, oblong oval Leaves, and hairy Pods. *Lathyrus distyplatyphyllos hirsutus, mollis, magno & peramano flore odore. Hort. Cath.* The sweet scented Pea.

8. *LATHYRUS pedunculis bifloris, cirrbis diphyllis, foliolis lineari-lanceolatis, leguminibus hirsutis, seminibus scabris. Flor. Leyd. Prod.* 363. Chichling Vetch with 2 Flowers on a Foot Stalk, a two-leaved Tendril, narrow Spear-shaped Lobes, hairy Pods, and rough Seeds. *Lathyrus angustifolius filiqua hirsuta. C. B. P.* Narrow leaved Chichling Vetch with a hairy Pod.

9. *LATHYRUS pedunculis bifloris, cirrbis diphyllis, foliolis alternis lanceolatis. Flor. Leyd. Prod.* 263. Chichling Vetch with 2 Flowers on a Foot Stalk, a two-leaved Tendril, and Spear-shaped alternate Leaves. *Lathyrus tingitanus filiquis orobi flore amplo ruberrimo. Mor. Hist.* 2. 55. Chichling Vetch of Tangier, with a bitter Vetch Pod, and a large red Flower.

10. *LATHYRUS pedunculis bifloris, cirrbis diphyllis, foliolis lineari-lanceolatis internodiis membranaceis.* Chichling Vetch with 2 Flowers on a Foot Stalk, a two-leaved Tendril, narrow Spear-shaped Lobes, and membranaceous Wings between the Joints. *Lathyrus luteus latifolius. Bot. Monsp.* Yellow broad leaved Chichling Vetch.

11. *LATHYRUS pedunculis multifloris, cirrbis diphyllis, foliolis ovalibus internodiis nudis. Hort. Cliff.* 367. Chichling Vetch with many Flowers on a Foot Stalk, a two-leaved Tendril, oval Leaves, and naked between the Joints. *Lathyrus arvensis repens tuberosus. C. B. P.* 344. Creeping Field Chichling Vetch with a tuberous Root.

12. *LATHYRUS pedunculis multifloris, cirrbis diphyllis, foliolis lanceolatis, cirrbis simplicissimis. Hort. Cliff.* 367. Chichling Vetch with many Flowers on a Foot Stalk, a two leaved Tendril, Spear-shaped Leaves, and single Tendrils. *Lathyrus luteus sylvestris dumetorum. J. B.* 2. p. 304. Yellow wild Chichling Vetch of the Woods.

3. *LATHYRUS pedunculis multifloris, cirrbis diphyllis tetraphyllisque, foliolis lanceolatis. It. W. Gotb.* 75. Chichling Vetch with many Flowers on a Foot Stalk, a two leaved, and sometimes four leaved Tendril, and Spear-shaped Leaves. *Lathyrus major Narbonensis angustifolius J. B.* 2. 304. Greater Chichling Vetch of Narbonne with narrow Leaves.

14. *LATHYRUS pedunculis multifloris, cirrbis diphyllis, foliolis lanceolato-linearibus acuminatis, internodiis membranaceis.* Chichling Vetch with many Flowers on a Foot Stalk, a two leaved Tendril, Spear-shaped narrow Leaves, ending in acute Points, and membranaceous between the Joints. *Lathyrus sylvestris major, flore minore, foliis longius mucronatis. Acl. Phil. Lond.* n. 399. Greater wild Chichling Vetch with a smaller Flower, and longer pointed Leaves.

15. *LATHYRUS pedunculis multifloris, cirrbis diphyllis, foliolis lanceolatis, internodiis membranaceis. Hort. Cliff.* 367. Chichling Vetch with many Flowers on a Foot Stalk, a two leaved Tendril, Spear-shaped Leaves, and a membranaceous Stalk between the Joints. *Lathyrus latifolius. C. B. P.* 344. Broad leaved Chichling Vetch commonly called Everlasting Pea.

16. *LATHYRUS pedunculis multifloris, cirrbis diphyllis, foliolis ovato-lanceolatis, internodiis membranaceis.* Chichling Vetch with many Flowers on a Foot Stalk, a

two leaved Tendril, oval Spear-shaped Leaves, and a membranaceous Stalk between the Joints. *Lathyrus latifolius minor, flore majore. Boerb. Ind. alt.* 2. p. 42. Smaller broad leaved Chichling Vetch with a larger Flower, or large red flowering Everlasting Pea.

17. *LATHYRUS pedunculis multifloris, cirrbis polyphyllis, stipulis ovatis, basi acutis. Hort. Ups.* 217. Chichling Vetch with many Flowers on a Foot Stalk, a many leaved Tendril, and oval Stipulæ acute at the Base.

18. *LATHYRUS pedunculis unifloris, foliis simplicibus, stipulis subulatis. Lin. Sp. Pl.* 729. Chichling Vetch with 1 Flower on a Foot Stalk, single Leaves, and Awl-shaped Stipulæ. *Nissolia vulgaris. Tourn. Inst.* 656. Crimson Grass Vetch.

19. *LATHYRUS pedunculis unifloris calyce longioribus, cirrbis diphyllis simplicissimis. Lin. Sp. Pl.* 729. Chichling Vetch with single Flowers on a Foot Stalk, which are longer than the Empalement, and a two leaved single Tendril.

20. *LATHYRUS pedunculis bifloris, foliis reniformibus simplicissimis subtus venosis.* Chichling Vetch with 2 Flowers on a Foot Stalk, and Kidney-shaped single Leaves veined on their under Side. *Nissolia Americana procumbens, folio rotundo, flore luteo. Houtt. Mss.* Trailing American *Nissolia* with a round Leaf, and a yellow Flower.

The 1st Sort grows naturally in France, Spain, and Italy; this is an annual Plant, with a climbing Stalk about 2 Feet high. The Leaves come out at each Joint alternate; they are composed of 2 long narrow Lobes, with a Tendril, or Clasper, rising between, which fastens to any Support near. The Flowers come singly on Foot Stalks at each Joint; they are blue, and shaped like those of the Pea; these are succeeded by oval compressed Pods, with a double Membrane, or Wing, running longitudinally on the Back. This flowers in June and July, and the Seeds ripen in September. It is seldom cultivated, unless in Botanick Gardens for Variety.

The 2d Sort is cultivated in some Countries for the Seeds, which are used for feeding Poultry; this grows wild in Italy and Spain. It does not rise so high as the first Sort. The Leaves are longer, the Pods are near twice the Length of those, and are channelled on their back Side; this is cultivated in the same Manner as Vetches or Tares.

The 3d Sort was sent me from Verona, where it grows naturally; this is an annual Plant, which seldom rises more than 6 or 8 Inches high. The 2 Lobes of the Leaves are small, and end with Claspers. The Flowers are of a bright scarlet, and are succeeded by taper Pods, filled with roundish Seeds. This is only kept for Variety in some Botanick Gardens.

The 4th Sort grows naturally in Bavaria; this is also an annual Plant. The Stalk rises from 2 to 3 Feet high, garnished with Leaves at each Joint, which are composed of 4 oval Lobes, ending with Claspers. At the Base of the Foot Stalk are two small Appendages (called Stipulæ) sharply indented on their Edges. The Flowers are small, blue, and sit close to the Stalk, standing singly; these are succeeded by compressed Pods, an Inch long, containing 3 or 4 roundish Seeds. It flowers in June, and the Seeds ripen in August; this is kept for Variety in Botanick Gardens.

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The 5th Sort grows naturally about *Paris*; this is an annual Plant with a slender Stalk, about 2 Feet high, garnished with Leaves composed of several narrow Lobes placed alternate along the Mid-rib, which ends in Claspers. The Flowers come out singly on pretty long Foot Stalks; they are blue, and about the Size of those of the common Tare. It grows naturally in some Parts of *England*, particularly on *Windsor Forest*, in moist Meadows, and has often a variable Flower.

The 6th Sort grows naturally in *Spain* and *Italy*; it is an annual Plant, with a climbing Stalk, which rises 3 Feet high, garnished with Leaves, composed of several Lobes, which are Spear-shaped, placed alternately along the Midrib, which is terminated by very long Claspers. The Foot Stalks of the Flowers are 5 or 6 Inches long, upon which stand 2 Flowers one above the other, shaped like those of the Pea. The Standard, which is large, is of a bright red Colour, but the Keel and Wings are white. The Flowers are succeeded by pretty long jointed Pods, filled with roundish Seeds. This flowers in *June* and *July*, and the Seeds ripen in Autumn.

The 7th Sort is commonly known by the Title of Sweet Pea; this grows naturally in *Ceylon*, but is hardly enough to thrive in the open Air in *England*. It is an annual Plant with a climbing Stalk, which rises from 3 to 4 Feet high, garnished with Leaves, composed of 2 large oval Lobes, whose Mid-rib is terminated by long Claspers. The Foot Stalks come out at the Joints; they are about 6 Inches long, and sustain 2 large Flowers, with dark purple Standards, and the Keel and Wings of a light blue Colour. The Flowers have a strong sweet Odour, and are succeeded by oblong inflated Pods, which are hairy, containing 4 or 5 roundish Seeds in each.

There are 2 other Varieties of this Sort, 1 of which has a Pink-coloured Standard with a white Keel, and the Wings of a pale blush Colour; this is commonly called Painted Lady Pea. The Flowers of the other are all white, which are the only Differences between them.

The 8th Sort grows naturally in *Essex*. I have found it in Places, which were spread over with Brambles, near *Hockerel*; this hath a perennial Root, sending out 3 or 4 weak Stalks, near 2 Feet long, garnished with Leaves composed of 2 oblong Lobes, whose Mid-rib is terminated by Claspers. The Foot Stalks are about 4 Inches long, and sustain 2 purple Flowers, succeeded by rough hairy Pods, little more than 1 Inch long, containing 3 or 4 roundish Seeds. This Sort is very rarely preserved in Gardens.

The 9th Sort was originally brought from *Tangier* to *England*; this is an annual Plant, whose Stalk rises 4 or 5 Feet high, garnished with Leaves, composed of 2 oval veined Lobes, whose Mid-rib ends with Claspers. The Foot Stalks are short, and sustain 2 large Flowers with purple Standards, whose Wings and Keel are of a bright red; these are succeeded by long jointed Pods, containing several roundish Seeds. This is sometimes titled by the Gardeners Scarlet Lupine.

The 10th Sort is an annual Plant, which grows naturally about *Montpelier*, and I have also received the Seeds from *Siberia*; this rises with a climbing Stalk, 5 or 6 Feet high, which has two Membranes, or Wings,

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running along from Joint to Joint. The Leaves are composed of 2 long narrow Lobes, whose Mid-ribs end with Claspers. The Flowers stand on long Foot Stalks, each sustaining 2 pale yellow Flowers, which are succeeded by long taper Pods, containing several roundish Seeds.

The 11th Sort grows naturally among the Corn in the South of *France*, and in *Italy*, but is cultivated in the *Dutch Gardens*, for the Roots, which are there sold in the Markets, and are commonly eaten; this hath an irregular tuberous Root, about as big as that of the Pignut, covered with a brown Skin; these shoot up several weak trailing Stalks, garnished with Leaves composed of 2 oval Lobes, ending with Claspers. The Foot Stalks of the Flowers are weak, about 3 Inches long, each sustaining 2 deep red Flowers, which are seldom succeeded by Pods, but the Roots increase plentifully in the Ground. This Sort will grow in moist Soils, but will thrive best on light Ground.

The 12th Sort grows naturally on the Banks and under Thickets, in most Parts of *England*; this hath a perennial creeping Root, whereby it propagates so fast as to be a very troublesome Weed, so should not be admitted into Gardens.

The 13th Sort grows naturally by the Side of Hedges, and in Thickets, in several Parts of *England*; this hath a perennial creeping Root, which sends out many climbing Stalks, which rise 5 or 6 Feet high; these are garnished with Leaves, which have sometimes 2, and at others 4 long narrow Lobes, and are terminated by Claspers. The Foot Stalks sustain several small Flowers with pale Standards and blue Wings and Keels; these are succeeded by long taper Pods, containing several roundish Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn.

The 14th Sort I found growing naturally in a Thicket near *Wimbleton*, in *Surry*, the Seeds of which I brought to the *Chelsea Garden*, where the Plants have flourished many Years, and continued their Difference without Variation. The Stalks of this Sort rise 6 or 7 Feet high, and have a Membrane running along on each Side between the Joints. The Leaves are composed of 2 narrow Spear-shaped Lobes, with long acute Points. The Foot Stalks are very long, and sustain several small Pea Blossom Flowers, with pale purple Standards, and the Keel and Wings of a deep blue Colour; these are succeeded by long taper Pods, like those of the former Sort.

The 15th Sort has been found growing naturally in some Parts of *England*, but is frequently cultivated in Gardens for Ornament; this hath a perennial Root, from which arise several thick climbing Stalks, from 6 to 8 Feet high, which have membranaceous Wings on each Side, between the Joints. The Leaves are composed of 2 Spear-shaped Lobes, and the Mid-rib is terminated by Claspers. The Foot Stalks are 8 or 9 Inches long, and sustain several large red Flowers, which are succeeded by long taper Pods, containing several roundish Seeds. It flowers in *June*, *July*, and *August*, and the Seeds ripen in Autumn, soon after which the Stalks die to the Root, and new ones arise in the Spring, from whence it is called everlasting Pea.

The 16th Sort differs from the last in the Stalks, being

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ing much shorter and stronger. The Leaves are broader, and of a deeper green. The Flowers are larger, and of a brighter red Colour, so make a much better Appearance; these Differences are lasting from Seeds, for I have raised many Plants from Seeds within 30 Years past, and have always found them to be the same as the Parent Plant.

The 17th Sort grows naturally in *Siberia*; this hath a perennial Root, and an annual Stalk, which is garnished with Leaves, composed of 6 or 8 Pair of oblong acute Lobes. The Flowers are blue, and many of them stand on each Foot Stalk; these are succeeded by Pods, shaped like those of the Pea. It flowers in *July*, and the Seeds ripen in Autumn.

The 18th Sort grows naturally in moist Meadows in many Parts of *England*; this rises with an upright Stalk, 1 Foot high, garnished with long narrow single Leaves at each Joint. The Foot Stalks come out from the Joints toward the upper Part of the Stalk; they are slender, about 3 Inches long, some having but one, and others 2 bright red Flowers on their Tops. It flowers in *May* and *June*, and the Seeds ripen in Autumn. This is rarely kept in Gardens.

The 19th Sort grows naturally in *Syria*; this is an annual Plant, with a trailing Stalk, garnished with Leaves, composed of 2 Lobes, whose Mid-rib is terminated by a single Tendril. The Foot Stalk supports 1 Flower of a pale purple Colour, and when the Flowers decay, the Germen is thrust into the Ground, where the Pods are formed, and the Seeds ripen.

The 20th Sort was discovered by the late Dr. *Houftoun*, growing naturally at *La Vera Cruz*; this is an annual Plant with a trailing Stalk, a Foot long, garnished with a single Kidney-shaped Leaf at each Joint. The Flowers grow 2 together on very short Foot Stalks; they are small, and of a deep yellow Colour; these are succeeded by short taper Pods including 3 or 4 small roundish Seeds.

This Sort is tender, so the Seeds should be sown on a hot Bed in the Spring, and when the Plants are fit to remove, they should be each planted into a small Pot filled with light Earth, and plunged into a Tan Bed, where they should constantly remain, treating them as other tender Plants from warm Countries; if they are brought forward in the Spring; they will flower in *July*, and their Seeds will ripen in Autumn.

The other Sorts are preserved in some curious Gardens for the Variety of their Flowers. These may all of them be propagated by sowing their Seeds, either in Spring or Autumn, but those which are sowed in Autumn should have a light Soil, and a warm Situation, where the Plants will abide the Winter, and come to flower early the following Spring, and their Seeds will ripen in *July*; but those which are sown in the Spring should have an open Exposure, and may be planted on almost any Soil, for they are not very tender Plants, nor do they require much Culture; these Sorts should all of them be sown where they are designed to remain, for they seldom succeed, when they are transplanted; so that where they are sown for Ornament, there should be 6 or 8 Seeds sown in a small Patch, in different Parts of the Borders of the Flower Garden, and when the Plants come up, they should be carefully kept clear from Weeds, but when they are grown 2 or 3 Inches

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high, there should be some Sticks put down by them to support them, otherwise they will trail on the Ground, and become unightly, besides, they will trail on whatever Plants grow near them.

LATIFOLIOUS Trees and Plants are such as have broad Leaves.

LAVANDULA. *Tourn. Inst. R. H. 198. Tab. 93. Lin. Gen. Pl. 630.* Lavender; in *French*, *Lavande*.

The Characters are,

The Flower hath an oval permanent Empalement of 1 Leaf, obscurely indented at the Brim. The Flower is of the Lip Kind, with 1 Petal, having a cylindrical Tube longer than the Empalement, but spreading above; the upper Lip is large, bifid, and open; the under Lip is cut into 3 equal Segments. It hath 4 short Stamina situated within the Tube of the Petal, 2 being shorter than the other, and terminated by small Summits. It hath a Germen divided in 4 Parts, supporting a slender Style the Length of the Tube, crowned by an obtuse indented Stigma. The Germen turns to 4 oval Seeds, sitting in the Empalement.

The Species are,

1. LAVANDULA foliis lanceolatis integris, spicis nudis. *Hort. Cliff. 303.* Lavender with entire Spear-shaped Leaves and naked Spikes. *Lavandula latifolia. C. B. P. 216.* Broad leaved Lavender.

2. LAVANDULA foliis lanceolato-linearibus, spicis nudis. Lavender with Spear-shaped narrow Leaves, and naked Spikes. *Lavandula angustifolia. C. B. P. 216.* Narrow leaved Lavender.

3. LAVANDULA foliis duplicato-pinnatifidis. *Vir. Cliff. 56.* Lavender with Leaves doubly Wing-pointed. *Lavandula folio dissecto. C. B. P. 216.* Lavender with a cut Leaf.

4. LAVANDULA foliis duplicato-pinnatifidis hirsutis, spicis fasciculatis. Lavender with doubly Wing-pointed hairy Leaves, and Spikes of Flowers growing in Clusters. *Lavandula folio longiore tenuius & elegantius dissecto. Tourn. Inst. R. H. 198.* Lavender, with a longer narrower, and more elegant cut Leaf.

The 1st Sort is cultivated in several of the *English* Gardens, and has been generally known by the Title of Spike, or Lavender Spike; the Leaves of this Sort are much shorter and broader than those of the common Lavender, and the Branches are shorter, more compact, and fuller of Leaves. This Sort doth not often produce Flowers, but when it does, the Flower Stalks are garnished with Leaves very different from those on the other Branches, approaching nearer to those of the common Sort, but are broader; the Stalks grow taller, the Spikes of Flowers are larger, the Flowers smaller, and in looser Spikes. It generally flowers a little later in the Season. This has been frequently confounded with the common Lavender, and has been supposed the same Species, but is undoubtedly a different Plant.

This I believe to be the same with what Dr. *Morisson* calls *Lavandula latifolia serilis*, for the Plants will continue several Years without producing Flowers; during which Time they have a very different Appearance, as those Branches of the same Plant always have which do not flower; but I have planted Slips taken from those flowering Branches with narrow Leaves, and others from those with the broad Leaves, but have always

found the Plants so propagated to return to their original Sort, the Cuttings with the narrow Leaves have become broad again.

The 2d Sort is the common Lavender, so well known as to require no Description. Both these Sorts flower in *July*, at which Time the Spikes of the second Sort are gathered for Use; there is a Variety of this with white Flowers.

These are propagated by Cuttings or Slips, the best Season for which is in *March*, when you should plant them in a shady Situation, or at least shade them with Mats until they have taken Root; after which they may be exposed to the Sun, and when they have obtained Strength, may be removed to the Places where they are designed to remain. These Plants will abide the longest in a dry, gravelly, or stony Soil, in which they will endure our severest Winters; though they will grow much faster in the Summer, if they are planted on a rich light moist Soil, but then they are generally destroyed in Winter, nor are the Plants half so strong scented, or fit for medicinal Uses, as those which grow upon the most barren rocky Soil.

These Plants were formerly in Use to make Edgings to Borders in Gardens, for which Purpose they are by no Means proper, for they will grow too large for such Designs; and if they are often cut in very dry Weather, they are subject to decay; and in hard Winters they are very often killed, so that the Edging will not be complete: Besides, these Plants greatly exhaust the Goodness of the Soil, whereby the Plants in the Borders will be deprived of their Nourishment; so that they should never be planted in a fine Garden among other choice Plants and Flowers, but rather be placed in Beds in the Physick Garden, or in any Part of the Kitchen Garden, if the Soil is dry.

The 3d Sort grows naturally in *Andalusia*; this is an annual Plant, which rises with an upright branching Stalk near 3 Feet high; the Stalks are woolly, and garnished with hoary Leaves growing opposite, which are cut into many Divisions to the Mid-rib; these Segments are again divided on their Borders toward the Top, into 3 obtuse Segments, so that the end in many Points. The Foot Stalk of the Flower is continued from the End of the Branches, which is naked, and about 6 Inches long, having 4 Corners or Angles, and is terminated by a close Spike of Flowers about 1 Inch long; the Spike has the Rows of Flowers twisted spirally: Under this Spike there are commonly 2 small ones proceeding from the Side of the Stalk, at about an Inch Distance from the middle Spike. This Sort flowers in *July*, and the Seeds ripen in Autumn. There are two Varieties of this, one with blue, and the other with white Flowers.

This Sort is sown every Spring on Borders or Beds of light fresh Earth, and when the Plants come up, they may be transplanted into other Borders of the Flower Garden, or into Pots, to remain for good; where they will require no farther Care, but to keep them clean from Weeds. These are pretty Plants to place in large Borders, among others, for Variety, but they are never used with us; they may also be preserved in the Winter, if placed in a Green-house in Autumn; but they never continue longer than two Years with us, and

many Times (if they have produced Seeds the first Year) they will not continue so long. Nor do those Plants which are thus preserved, appear handsome the following Summer, so that, unless in bad Seasons, when the Seeds do not ripen in the open Air, it is not worth while to preserve the Plants. If the Seeds of this Sort are permitted to scatter, the Plants will come up the following Spring without Care, and may be treated in the Manner before directed.

The 4th Sort grows naturally in the *Canary Islands*, from whence the Seeds were sent to the Bishop of *London*, which were sown in his Lordship's Garden at *Fulham*, where this Plant was first raised. This rises with an upright branching square Stalk 4 Feet high, garnished with Leaves which are longer, and cut into narrower Segments than those of the third Sort. They are of a lighter green and hairy, the naked Flower Stalk is also longer, and terminated with a Cluster of Spikes of blue Flowers, and at 2 or 3 Inches below these, are 2 small Spikes of Flowers, standing one on each Side the Stalk. The Flowers are smaller than those of the common Lavender, but are of the same Shape.

This Sort is tenderer than either of the former, so the Seeds of this must be sown on a moderate hot Bed in the Spring; and when the Plants come up, they should be each planted into a separate small Pot filled with light Earth, and plunged into another hot Bed, to bring the Plants forward; and in the Beginning of *June*, they should be inur'd to the open Air, where they should be placed in a sheltered Situation toward the End of that Month; in *July* the Plants will flower, and if the Autumn proves warm, the Seeds will ripen in *September*; but when they do not perfect Seeds, the Plants may be preserved through the Winter in a good Green-house, where they will produce Flowers most Part of that Season, whereby good Seeds may be obtained.

LAVATERA. Tourn. *Art. Gal.* 1706. Tab. 3. Dill. Gen. 10. Lin. Gen. Pl. 752.

The Characters are,

The Flower has a double Empalement; the outer is of one Leaf, short, obtuse, and trifid; the inner is of 1 Leaf, and quinquesfid; they are both permanent. The Flower hath 5 Petals, which are joined at their Base, plain, and spread open above. It has many Stamina, joined in a Column below, but above are loose; they are inserted in the Petal, and terminated by Kidney-shaped Summits. It has an orbicular Germen, supporting a short cylindrical Style, crowned by many bristly Stigmas. The Empalement becomes a Fruit with several Capsules, covered in Front by a hollow Shield, each Capsule having 1 Kidney-shaped Seed.

The Species are,

1. LAVATERA foliis infimis cordato-orbiculatis, caulibus trilobis acuminatis glabris, pedunculis unifloris, caule herbaceo. Lavatera whose lower Leaves are orbicularly Heart-shaped, those on the Stalks set with 3 acute Lobes, and smooth, 1 Flower on a Foot Stalk, and an herbaceous Stalk. *Lavatera folio & facie altheae.* *Art. R. P.* 1706. Lavatera with the Leaf and Appearance of Marshmallow.

2. LAVATERA foliis infimis cordato-angulatis, supernis sagittatis, pedunculis unifloris caule herbaceo birsuto. Lavatera with the lower Leaves, angularly Heart-shaped, the

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the upper ones Arrow-pointed, a single Flower on each Foot Stalk, and a hairy herbaceous Stalk. *Lavatera Africana*, flore pulcherrimo. Boerb. Ind. alt. African *Lavatera* with a beautiful Flower.

3. *LAVATERA foliis glabris, caule scabro herbaceo, pedunculis unifloris, fructibus orbiculo tectis.* Hort. Up. 203. *Lavatera* with smooth Leaves, a rough herbaceous Stalk, 1 Flower on a Foot Stalk, and an orbicular closed Fruit. *Malva folio vario.* C. B. P. Mallow with a variable Leaf.

4. *LAVATERA caule herbaceo, fructibus denudatis, calycibus incis.* Hort. Upf. 203. *Lavatera* with an herbaceous Stalk, naked Fruit, and a cut Empalement. *Althæa flore majore.* C. B. P. 316. Marshmallow with a larger Flower.

5. *LAVATERA foliis quinquelobatis hirsutis, caule erecto fruticoso.* Icon. Tab. 161. *Lavatera* with hairy Leaves having 5 Lobes, and a shrubby upright Stalk.

6. *LAVATERA caule arboreo, foliis septemangularibus tomentosis plicatis, pedunculis confertis unifloris axillaribus.* Hort. Upsal. 202. *Lavatera* with a Tree-like Stalk, woolly plaited Leaves, having 7 Angles, and Foot-Stalks with single Flowers arising in Clusters from the Wings of the Leaves. *Malva arborea veneta dicta, parvo flore.* C. B. P. 315. Tree Mallow with a small Flower.

7. *LAVATERA caule fruticoso, foliis subcordatis subtrilobis rotundatis crenatis stipulis cordatis, pedunculis unifloris.* Lin. Sp. Pl. 691. *Lavatera* with a shrubby Stalk, Heart-shaped Leaves having 3 round indented Lobes, which are crenated, Heart-shaped Stipulæ, and Foot Stalks with single Flowers. *Althæa frutescens, folio rotundiore incano.* C. B. P. 316. Shrubby Marshmallow with a rounder hoary Leaf.

8. *LAVATERA caule fruticoso, foliis quinquelobo-bastatis.* Hort. Upf. 202. *Lavatera* with a shrubby Stalk, and Leaves having 5 Arrow-pointed Lobes. *Althæa frutescens, folio acuto, parvo flore.* C. B. P. 316. Shrubby Marshmallow with an acute Leaf, and a small Flower.

9. *LAVATERA caule fruticoso, foliis orbiculatis crenatis tomentosis, pedunculis confertis unifloris axillaribus.* *Lavatera* with a shrubby Stalk, round, crenated, woolly Leaves, and Foot Stalks growing in Clusters at the Wings of the Stalk, and each sustaining a single Flower. *Althæa frutescens Hispanica folio rotundiori.* Tourn. Inf. R. H. 97. Spanish shrubby Marshmallow with a rounder Leaf.

10. *LAVATERA caule fruticoso tomentoso, foliis orbiculato-cordatis undatis incanis, serrato-crenatis, pedunculis sæpius trifloris.* *Lavatera* with a shrubby woolly Stalk, round Heart-shaped hoary Leaves, waved, and sharply indented, and Foot Stalks which have frequently 3 Flowers. *Althæa frutescens Lusitanica, folio rotundiori undulato.* Tourn. Inf. 97. Portugal shrubby Marshmallow with a rounder waved Leaf.

11. *LAVATERA caule fruticoso, foliis quinquelobatis acutis crenatis tomentosis, racemis terminalibus.* *Lavatera* with a shrubby Stalk, woolly Leaves having 5 acute Lobes, and long Bunches of Flowers terminating the Stalks. *Althæa frutescens, folio bryoniæ.* C. B. P. 316. Shrubby *Althæa* with a Briony Leaf.

The 1st Sort grows naturally in *Syria*; it is an annual Plant, with an erect, branching, herbaceous Stalk,

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rising 2 Feet high; the under Leaves are orbicularly Heart-shaped, smooth, and stand on long Foot Stalks, the upper are divided into 3 acute Lobes; the Flowers come out on long Foot Stalks from the Wings of the Leaves, they are very large, and spread open like those of the Marshmallow, and are of a pale red or Rose Colour. These come out in *July*, the Seeds ripen in *September*, and the Plants decay in Autumn.

There is a Variety of this with white Flowers, which has accidentally risen from Seeds.

The 2d Sort grows naturally at the *Cape of Good Hope*, from whence the Seeds were brought to *Holland*, and the Plants there cultivated, and the Seeds have since been communicated to most Parts of *Europe*. This differs from the first in the Shape of the Leaves, the lower having Angles, and the upper being Arrow-pointed; the Stalks are hairy, the Flowers larger, and of a brighter red Colour.

This Sort is annual, and flowers at the same Time with the former, and the Seeds are ripe in Autumn.

The 3d Sort grows naturally in *Spain* and *Sicily*; this is an annual Plant, which rises with slender herbaceous Stalks about 2 Feet high, covered with a brown Bark; the lower Leaves are roundish, and the upper are angular, and some are Arrow-pointed. The Flowers are not half so large as those of either of the former, and are of a pale red Colour; these stand on short Foot Stalks, and appear about the same Time with the former. This is certainly a distinct Species, for I cultivated it more than 30 Years, and never found it vary.

The 4th Sort hath a perennial Root and an annual Stalk, which rises 4 or 5 Feet high and is woolly, garnished with angular Heart-shaped Leaves, standing on long Foot Stalks. The Flowers come out from the Wings of the Stalk toward the Top, sitting close to the Stalks at every Joint; they are of a purplish Colour, and shaped like those of the Marshmallow, but larger. These appear in *July* and *August*, and the Seeds ripen in Autumn, then the Stalks decay to the Root. It grows naturally in *Austria* and *Bohemia*.

The 5th Sort grows naturally at the *Cape of Good Hope*, the Seeds of it were sent me by the ingenious Mr. Storm, Gardener at *Amsterdam*. This rises with a shrubby branching Stalk 8 or 10 Feet high, garnished with large hairy Leaves, deeply divided into 5 roundish Lobes, indented on their Edges, and of a bright green, standing alternately on long Foot Stalks; as the Plants become more shrubby, the Leaves decrease in Size, so that the upper Leaves are not more than a sixth Part of the Bigness of the first or lower Leaves. The Flowers come out singly at the Wings of the Leaves at every Joint, so that as the Branches extend there is a Succession of Flowers, whereby the Plants are seldom destitute of Flowers the whole Year. The Flowers are of a bright purple Colour, but not very large; these are succeeded by Capsules having many Partitions, in each of these is 1 Kidney-shaped Seed, which ripen in Succession as the Flowers are produced.

The 6th Sort is commonly called Mallow-Tree; this rises with a very strong thick Stalk, 8 or 10 Feet high, dividing into many Branches at the Top, garnished with soft woolly Leaves that are plaited, and the Edges

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Edges cut into several Angles. The Flowers are produced in Clusters at the Wings of the Leaves, each standing on a separate Foot Stalk; they are of a purple Colour, and shaped like those of the common Mallow, and are succeeded by Seeds of the same Form. This Sort flowers from *June* to *September*, and the Seeds are ripe in Autumn.

The 7th Sort rises with a shrubby Stalk 7 or 8 Feet high, sending out several long Branches, garnished with woolly Leaves, differing greatly in Size and Shape, the lower being partly Heart-shaped at their Base, but divided into 5 roundish Lobes; the upper, which are small, have 3 Lobes indented on their Edges. The Flowers come out from the Wings of the Stalk, 3 or 4 at each Joint, upon very short Foot Stalks; they are of a light purple Colour, and shaped like those of the Marshmallow. There is a Succession of these Flowers from *June* to Autumn.

The 8th Sort is a Shrub which grows to the same Size as the 7th, and differs from it in the Shape of the Leaves, which are divided into 3 or 5 acute pointed Lobes, and the Flowers are smaller, but of the same Shape and Colour, and continues in Flower at the same Time. This grows naturally in the South of *France*.

The 9th Sort rises with a shrubby Stalk 6 or 8 Feet high, sending out many Branches, garnished with roundish crenated woolly Leaves, standing on long Foot Stalks; the Foot Stalks of the Flowers come out in Clusters from the Wings of the Leaves, each sustaining 1 large pale blue Flower, of the same Shape with those of the other Species. This flowers at the same time with them, and the Seeds ripen in Autumn.

The 10th Sort hath a soft shrubby woolly Stalk, which rises 4 or 5 Feet high; these stand more erect than either of the former Sorts, and do not branch so much; the Leaves are Heart-shaped at their Base, but round on their Edges, very hoary and waved, standing on long Foot Stalks. The Flowers come out in Clusters from the Wings of the Leaves, standing on Foot Stalks of different Lengths; these generally support but 1 Flower, but sometimes they have 2 or 3; the Flowers are large, and of a pale blue Colour. They appear at the same Time with the former, and their Seeds ripen in Autumn. It grows naturally in *Portugal*.

The 11th Sort rises with a shrubby Stalk 6 or 7 Feet high, sending out several shrubby Branches, garnished with woolly Leaves, divided into 5 Lobes which end in acute Points, and are crenated on their Edges; the lower Part of the Branches are adorned with a single Flower at each Joint, sitting close to the Stalk, but the Branches are terminated by loose Spikes of Flowers, of a pale blue Colour, shaped like those of the former.

The six last mentioned Sorts, though they have shrubby Stalks, are but of short Duration here; the 6th, 10th, and 11th Sorts, seldom continue longer than 2 Years, unless when they happen to grow on dry Rubbish, where they make but little Progress, and their Stalks and Branches are firmer, so better able to resist the Cold; for when they are in good Ground, they are very vigorous and full of Sap, so are killed by the Frost in common Winters. The other three Sorts are not quite so tender, nor of so short Duration; these will

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continue 3 or 4 Years, and sometimes longer, provided the Winters are not very severe; or if the Plants stand in a warm Situation and on a dry Soil, but in moist rich Ground they seldom continue long.

All these shrubby Sorts are easily propagated by Seeds, which should be sown in the Spring, on a Bed of light Earth; and when the Plants are about 3 or 4 Inches high, they should be transplanted to the Places where they are designed to remain; for as they shoot out long fleshy Roots which have but few Fibres, they do not succeed well if transplanted after they are grown large. If the Seeds of these Plants are permitted to scatter on the Ground, the Plants will come up the following Spring; and when they happen to fall into dry Rubbish, and are permitted to grow therein, they will be short, strong, woody, and produce a greater Number of Flowers than those Plants which are more luxuriant. As these Plants continue a long Time in flower, a few Plants of each Sort may be allowed a Place in all Gardens where there is Room.

The 3 first Sorts are annual Plants, which are propagated by Seeds: The Season for sowing them is in *March*, on a Bed of fresh light Earth; and when the Plants are come up, you must carefully clear them from Weeds; and in very dry Weather, they must be now and then refreshed with Water. When they are about 2 Inches high, you must transplant them into the Places where they are designed to remain, which should be in the Middle of the Borders in the Flower Garden; for, if the Soil be good, they will grow 2 or 3 Feet high; in transplanting them you must take them up very carefully, preserving a Ball of Earth to their Roots, otherwise they are apt to miscarry; and also water and shade them until they have taken Root, after which they will require no other Care but to clear them from Weeds, and to fasten them to Stakes, to prevent their being injured by strong Winds. You may also sow their Seeds in Autumn, and when the Plants are come up, transplant them into small Pots, which, towards the End of *October*, should be placed in a common hot Bed Frame, where the Plants being defended from severe Frosts, will abide the Winter very well; and in the Spring, you may shake them out of the Pots, and plant them into larger, or else into the full Ground, where they may remain to flower. The Plants thus managed will be larger, and flower stronger and earlier than those sown in the Spring, and from these you will constantly have good Seeds, whereas those sown in the Spring sometimes miscarry. The Seeds of the 3d Sort should be sown in the Spring, in the Place where they are to remain, for they do not well bear removing in the Summer.

The 2 first Sorts are very ornamental Plants in a fine Garden, when placed among other Annuals, either in Pots or Borders.

The 4th Sort hath a perennial Root which abides several Years, but the Stalks decay in the Autumn, and new ones arise in the Spring. This is propagated by Seeds, which should be sown on a Bed of light Earth in the Spring, and when the Plants are fit to remove they should be either transplanted to the Places where they are to remain, or into Pots where they may stand to get more Strength, before they are planted in the full

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full Ground. After the Plants are well rooted, they will require no other Care, but to keep them clear from Weeds; and if the Winter should prove very severe, it will be proper to cover them with old Tanners Bark, to keep out the Frost; but they will endure the Cold of our ordinary Winters very well, and will produce their Flowers and ripen their Seeds annually.

The 5th Sort will not live through the Winter in the open Air in England, so the Seeds should be sown in the same Manner as those of the other Sorts; and when the Plants are fit to remove, they should be each planted into a small Pot filled with light Earth, and placed in the Shade till they have taken new Root; then they may be removed to a sheltered Situation, and mixed with other hardy exotick Plants. As the Plants advance in their Growth, they will require larger Pots, and must be treated as other Plants; in Autumn they must be removed into the Green-house, and placed with Myrtles and other Kinds of Plants, which only require Protection from hard Frost, but must have as much free Air as possible in mild Weather.

LAUREOLA. See Thymelæa.

LAUROCERASUS. See Padus.

LAURUS. Tourn. Inst. R. H. 597. Tab. 367. Lin. Gen. Pl. 452. The Bay Tree; in French, Laurier.

The Characters are,

It is male and female in different Plants, the male Flowers have no Empalement. It hath 1 Petal, cut into 6 Segments at the Top, and 9 Stamina shorter than the Petal, standing by Threes, terminated by slender Summits. The female Flowers have no Empalement, they have 1 Petal, slightly cut into 6 Segments at the Top. In the Bottom is situated an oval Germen, supporting a single Style the same Length with the Petal, crowned by an obtuse Stigma; there are 2 globular Glands, standing on very short Foot Stalks, fixed to the Base of the Petal. The Germen becomes an oval Berry with 1 Cell, inclosing 1 Seed of the same Form.

The Species are,

1. LAURUS foliis lanceolatis venosis perennantibus, floribus quadrifidis diœciis. Hort. Cliff. 105. Bay Tree with ever-green, Spear-shaped, veined Leaves, and Flowers cut into 4 Points, which are male and female. *Laurus latifolia* Dioscoridis. C. B. P. The broad leaved Bay of Dioscorides.

2. LAURUS foliis lanceolatis venosis perennantibus marginibus undatis. Bay Tree with ever-green Spear-shaped Leaves, veined and waved on their Edges. *Laurus vulgaris folio undulato*. H. R. Par. Common Bay Tree with waved Leaves.

3. LAURUS foliis lineari-lanceolatis venosis perennantibus, floribus quinquefidis diœciis, Bay Tree with narrow Spear-shaped Leaves which are ever-green and veined, and Flowers cut into 5 Points which are male and female. *Laurus tenuifolia*. Tab. Icon. 25. Narrow leaved Bay.

4. LAURUS foliis lanceolatis perennantibus venosis planis, ramulis tuberculatis cicatricibus, floribus racemosis. Hort. Cliff. 154. Bay Tree with ever-green, veined, Spear-shaped, plain Leaves, Branches having Tubercles and Cicatrices, and Flowers growing in Bunches. *Laurus Indica*. Ald. Hort. Farnes. 61. The Indian Bay.

5. LAURUS foliis lanceolatis perennantibus marginibus

reflexis transverse venosis, floribus racemosis. Bay Tree with ever-green Spear-shaped Leaves, whose Borders are reflexed and transversely veined, and Flowers growing in Bunches. *Laurus Caroliniensis, foliis acuminatis, baccis cæruleis, pediculis longis rubris insidentibus*. Catesb. Carol. 1. p. 63. Carolina Bay Tree with pointed Leaves, and blue Berries sitting on long red Foot Stalks.

6. LAURUS foliis ovato-lanceolatis obtusis integris annuis. Bay Tree with oval, obtuse, Spear-shaped, entire Leaves, which are annual. *Arbor Virginiana, citrea vel limonii folio, Benzoinum fundens*. Hort. Amst. 1. p. 189. The Benjamin Tree.

7. LAURUS foliis integris trilobisque. Hort. Cliff. 154. Bay Tree with entire Leaves, or having 3 Lobes. *Cornus mas odorata, folio trifido, margine plano, Sassafras dicta*. Pluk. Alm. 120. The Sassafras.

8. LAURUS foliis venosis oblongis acuminatis annuis, subtus rugosis. Bay Tree with oblong, acute-pointed, veined, annual Leaves, rough on their under Side. *Laurus foliis lanceolatis enerviis annuis*. Flor. Virg. 159. Bay Tree with Spear-shaped, winged, un-veined, annual Leaves.

9. LAURUS foliis trinerviis lanceolato-ovatis, nervis supra basin unitis. Lin. Mat. Med. 192. Bay Tree with oval, Spear shaped Leaves, having 3 Veins which unite above the Base. *Campbora officinarum*. C. B. P. 500. The Camphire Tree.

10. LAURUS foliis ovatis planis integerrimis, pedunculis racemosis, floribus in capitulum collectis. Bay Tree with plain, oval, entire Leaves, branching Foot Stalks, and Flowers collected into Heads. *Laurus Americana, foliis subrotundis, floribus in capitulum collectis*. Houst. Mss. American Bay Tree with roundish Leaves, and Flowers collected into Heads.

The 1st Sort is the broad leaved Bay, which grows naturally in Asia, from whence I have received the Berries several Times. This is too tender to thrive in the open Air in England, so is commonly kept in Pots or Tubs, and removed into the Green-house in Winter. The Leaves of this Sort are much broader than those of the common Bay, and smoother: There are male and female Plants of this, as there are also of all the other Sorts.

The 2d is the common Bay; of this there are Plants with plain Leaves, and others waved on their Edges, but they seem to be the same Species, for the young Plants which I have raised from the Berries of one, have been a Mixture of both Sorts; but this is undoubtedly a different Species from the first, for this Sort thrives well in the open Air, and is seldom hurt, except in very severe Winters, whereas the first will not live abroad in common Winters without Shelter.

The 3d Sort hath very long narrow Leaves, not so thick as those of the two former, and of a lighter green; the Branches are covered with a purplish Bark, and the male Flowers come out in small Clusters from the Wings of the Leaves sitting close to the Branches. This Sort is too tender to thrive in the open Air in England, so the Plants are generally kept in Pots or Tubs, and housed in Winter as the first Sort.

The 4th Sort grows naturally at Madeira and the Canary Islands, from whence it was formerly brought to Portugal, where it has been propagated in so great Plenty

Plenty, as to appear now as if it was a Native of that Country. In the Year 1620; this Plant was raised in the *Farnesian* Garden, from Berries which were brought from *India*, and was supposed to be a Bastard Sort of Cinnamon. This grows to the Height of 30 or 40 Feet in temperate Countries, but it is too tender to thrive in the open Air in *England*, so the Plants are kept in Pots or Tubs, and removed into the Green-house in Winter.

The Leaves of this Sort are larger than those of the common Laurel, they are thick, smooth, and of a light green, the Foot Stalks inclining to red; the Branches are regularly disposed on every Side, and the male Flowers are disposed in long Bunches, they are of a whitish green Colour: the Berries are much larger than those of the other Sorts. It is called by some the Royal Bay, and by others the *Portugal Bay*.

The 5th Sort grows naturally in *Carolina* in great Plenty, where it is called Red Bay; it also is found in other Parts of *America*, but not in so great Plenty. In some Situations near the Sea, this rises with a strait Trunk to a considerable Height, and their Stems are large, but in the inland Parts of the Country they do not grow so large. The Wood of this Tree is much esteemed, being of a fine Grain, so is of excellent Use for Cabinets, &c.

The Leaves of this Sort are much longer than those of the common Bay, and are a little woolly on their under Side, their Edges are a little reflexed; the Veins run transversely from the Mid-rib to the Sides, and the male Flowers come out in long Bunches from the Wings of the Leaves. The female Trees produce their Flowers in loose Bunches, standing on pretty long Foot Stalks which are red; these are succeeded by blue Berries sitting in red Cups.

This Sort is also too tender to thrive in the open Air in *England*, for although some Plants have lived abroad in a mild Winter, which were planted in a warm Situation, yet the first sharp Winter has destroyed them, so that these Plants must be kept in Pots or Tubs; and housed in Winter like the former.

These 5 Sorts may be propagated by Layers, and the common Sort is generally propagated by Suckers, but those Plants never keep to 1 Stem, but generally send out a great Number of Suckers from their Roots, and form a Thicket, but do not advance in Height; therefore the best Way to have good Plants, is to raise them from the Berries, when they can be procured, for the Plants which come from Seeds, always grow larger than the others, and do not put out Suckers from their Roots, so may be trained up with regular Stems. The best Way is to sow the Berries in Pots, and plunge them into a moderate hot Bed, which will bring up the Plants much sooner than if they were sown in the full Ground, so they will have a longer Time to get Strength before Winter; but the Plants must not be forced with Heat, therefore they should be inured to bear the open Air the Beginning of June, into which they should be removed, where they may remain till Autumn; then the Pots should be placed under a common Frame, that the Plants may be protected from hard Frost, but in mild Weather they may enjoy the free Air; for while the Plants are so young, they are in Danger of suffering in hard Frost, even the common Sort of Bay. The Spring following,

those Plants which will not live in the open Air, should be each transplanted into separate Pots; but the common Sort may be planted in Nursery Beds 6 Inches asunder each Way, where they may grow 2 Years, by which Time they will be fit to plant where they are designed to grow. The other Sorts must be constantly kept in Pots, so should every Year be new potted, and as they advance in Growth, they must have larger Pots. As these Plants require Shelter in Winter, a few of each Sort will be enough for a large Green-house.

The common Bay will make a Variety in all evergreen Plantations, and as it will grow under the Shade of other Trees, where they are not too close, so it is very proper to plant in the Borders of Woods, where it will have a good Effect in Winter.

The 6th Sort grows naturally in *North America*, where it rises to the Height of 8 or 10 Feet, dividing into many Branches, garnished with oval Spear-shaped Leaves near 3 Inches long, and 1 and a Half broad, smooth on their upper Surface, but with many transverse Veins on their under Side; these Leaves fall off in the Autumn, like other deciduous Trees. The Flowers I have but once seen, those were all male, and of a white herbaceous Colour, but if I remember right, they had but 6 Stamina in each.

The Sassafras Tree is also very common in most Parts of *North America*, where it spreads greatly by its Roots, so as to fill the Ground with Suckers where-ever it is permitted to grow, but in *England* this Shrub is with Difficulty propagated. In *America* it is only a Shrub, seldom rising more than 8 or 10 Feet high; the Branches are garnished with Leaves of different Shapes and Sizes, some of them are oval and entire, about 4 Inches long and 3 broad; others are deeply divided into 3 Lobes, these are 6 Inches long, and as much in Breadth from the Extremity of the two Outside Lobes; they are placed alternately on pretty long Foot Stalks, and are of a lucid green; these fall off in Autumn, and in Spring, soon after the Leaves begin to come out, the Flowers appear just below them, on slender Foot Stalks, each sustaining 3 or 4 small yellow Flowers, which have 5 oval concave Petals, and 8 Stamina in the male Flowers, which are upon different Plants from the female; these have an oval Germen, that afterward becomes an oval Berry, which, when ripe, is blue, but the Plants do not produce Fruit in *England*.

The 8th Sort grows naturally in *North America*, in swampy Lands; this rises with a shrubby branching Stalk 8 or 10 Feet high, covered with a purple Bark. The Leaves are placed opposite, and are near 2 Inches long and 1 broad, smooth on their upper Side, but veined on their under, where they are rough. This has not as yet produced Flowers here, but the Berries which were sent me from *Maryland* were red, and nearly the Size and Shape of the common Bay Berry.

The Camphire Tree grows naturally in *Japan*, and in several Parts of *India*, where it rises to a Tree of middling Stature, dividing into many small Branches, garnished with oval Spear-shaped Leaves, smooth on their upper Side, having 3 longitudinal Veins which unite above the Base; if these are bruised, they emit a strong Odour of Camphire, as also the Branches when broken. These are male and female on different Trees; I have

I have only seen those of the male, which has flowered plentifully in *England*; these were small, and composed of 5 concave yellow Petals, very like those of the *Sassafras* Tree, and were produced 3 or 4 on each Foot Stalk, in like Manner.

The 10th Sort was discovered by the late Dr. *Houftoun* at *La Vera Cruz*; this rises with a woody Stalk 20 Feet High, dividing into many Branches, covered with a gray rough Bark; at the Extremity of the Branches are produced the Foot Stalks, which are unequal in Length, but divide into several smaller, each sustaining a Cluster of small white Flowers, collected into a Head or small Umbel, having one general Involucrum; these are male and female on different Trees. The female Flowers which have no Stamina, are succeeded by oval Berries, not quite so large as those of the common Bay. The Leaves of this Tree are about 2 Inches long and 1 broad, rounded at the Top and entire, standing on very short Foot Stalks.

The *Sassafras* Tree is commonly propagated by the Berries, which are brought from *America*; but these Berries generally lie in the Ground a whole Year, and sometimes 2 or 3 Years, before they grow, when they are sown in the Spring; therefore the surest Method of obtaining the Plants will be, to get the Berries put into a Tub of Earth soon after they are ripe, and sent over in the Earth; and as soon as they arrive, to sow the Berries on a Bed of light Ground, putting them 2 Inches into the Earth; and if the Spring should prove dry, the Bed must be frequently watered, and shaded from the great Heat of the Sun in the Middle of the Day; with this Management many of the Plants will come up the first Season, but as a great many of the Berries will lie in the Ground till the next Spring, so the Bed should not be disturbed, but wait until the Season after, to see what will come up: The first Winter after the Plants come up, they should be protected from the Frost, especially in the Autumn; for the first early Frost at that Season is apt to pinch the Shoots of these Plants, which are tender and full of Sap, and do them more Injury than the severe Frost of the Winter; for when the extreme Part of the Shoots are killed, it generally affects the whole Plant.

When the Plants have grown a Year in the Seed Bed, they may be transplanted into a Nursery, where they may stand 1 or 2 Years to get Strength, and may then be transplanted into the Places where they are to remain for good.

There have been some of these Plants propagated by Layers, but these are commonly 2, and sometimes 3 Years before they put out Roots; and if they are not duly watered in dry Weather, they rarely take Root; so that it is uncertain, whether one in three of these Layers do succeed, which makes these Plants very scarce in *England* at present.

The Wood of this Shrub is frequently used to make Tea, which is esteemed a great Antiscorbutick; and in *Carolina* they frequently give a Decoction of the Wood and Leaves in intermitting Fevers; but the Flowers of the Shrub are gathered and dried by the most curious, and are used for Tea.

The *Benjamin* Tree, as it is falsely called, may be propagated as the *Sassafras*, by sowing the Berries: These

generally lie long in the Ground, so that unless they are brought over in Earth, as before directed, they often fail, or at least remain long in the Ground; but this is now frequently propagated by Layers in *England*, which put out Roots pretty freely, when the young Shoots are chosen to make Layers.

The 8th Sort is also a Native of the same Country with the last, and may be propagated by Seeds in the same Manner. This may also be propagated by Layers, which put out Roots pretty freely; and as the Shrubs do not produce Seeds in *England*, so this is the best Method to propagate them.

These 3 Sorts will live in the open Air in *England*, but the *Sassafras* is often injured by very severe Frosts, especially if they are in an exposed Situation; therefore these Plants should have a warm Situation and a loose Soil, and in moist Ground this, and also the 8th Sort, will thrive much better than in a dry Soil; for when they are planted on a hot gravelly Soil, they frequently die in Summer when the Seasons prove dry. They are all of them now much cultivated in *England*, to add to the Variety of Shrubs, but they are not very ornamental Plants; though indeed the *Sassafras* makes a good Appearance in Summer, when it is fully clothed with its large Leaves, which being of different Shapes, makes an agreeable Variety, when intermixed with Shrubs of the same Growth.

The Camphire Tree is very near a-kin to the Cinnamon Tree, from which it differs in the Leaves, those of the Cinnamon Tree having 3 Ribs running longitudinally from the Foot Stalk to the Point, which are remarkably large; whereas the Ribs of the Leaves of this Tree are small, and extend toward the Sides, and have a smooth shining Surface: They are both male and female in different Trees, so that there is a Necessity for both Sexes to stand near each other, in order to have good Seeds.

In *Europe* this Tree is propagated by Layers, which are 2 Years, and sometimes longer, before they take Root, so that the Plants are very scarce; and as all those which I have seen flower are male Trees, so there can be no Hopes of procuring Seeds from them here; but if the Berries of this, and also of the Cinnamon Tree, were procured from the Places of their Growth, and planted in Tubs of Earth, as hath been directed for the *Sassafras* Tree, there may be a Number of these Plants procured in *England*: And if they were sent to the *British* Colonies in *America*, they might be there cultivated, so as to become a publick Advantage; especially the Cinnamon Tree, which will grow as well in some of our Islands in the *West-Indies*, as in the native Places of its Growth; and in a few Years the Trees might be had in Plenty, for they propagate easily by the Berries. The *Portuguese* brought some of the Cinnamon Trees from the *East-Indies*, and planted them on the Island of *Princes*, on the Coast of *Africa*, where they now abound, having spread over a great Part of the Island; there are also some of them growing at the *Madeiras*.

The Camphire Tree does not require any artificial Heat in Winter, so that if they are placed in a warm dry Green-house, they will thrive very well. During the Winter Season they must be sparingly watered, and

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in the Summer they should be placed in a warm Situation, where they may be defended from strong Winds, and not too much exposed to the direct Rays of the Sun; and during this Season, they must be frequently refreshed with Water.

They may be propagated by laying down the young Branches in Autumn, which should be treated in the same Manner as is before directed for the *Benjamin*.

The last Sort requires a Stove to preserve it through the Winter in *England*; this is propagated by Seeds, which must be procured from the Country, where it grows naturally; but the Berries should always be taken from those Trees which stand near the male, otherwise they will not grow, which was the Case of those Berries sent to *England* by Dr. *Houfston*; for from a large Quantity of the Berries which were distributed to several Persons, but one Plant came up, and yet the Seeds were fresh.

This Plant requires the same Treatment as the Coffee Tree, so should be placed in a Stove, with that and other tender Plants of those warm Countries, and always kept in the Stove.

LAURUS ALEXANDRINA. See *Ruscus*.

LAURUS TINUS. See *Tinus*.

LAWN is a great Plain in a Park, or a spacious Plain adjoining to a noble Seat.

As to the Dimensions of it, it should be as large as the Ground will permit; but never less, if possible, than 30 or 40 Acres; but this is to be understood of Lawns in great Parks, for in Gardens, a Lawn of 8 or 10 Acres is a reasonable Size for Gardens of a moderate Extent, and 12 or 15 Acres for those of the largest Size.

As to the Situation of a Lawn, it will be best to be in the Front of the House, and to lie open to the neighbouring Country, and not pent up with Trees.

If the House front the East, it will be most convenient, because the Rooms will be shaded in the Afternoon, and so the Objects to be viewed from the House will be much beautified by the Sun's shining upon them at that Time of the Day; for if the best Room of the House front the Lawn, as it always should do, the Afternoon being the most usual Time for People of Fashion to solace themselves in such Rooms, then the Sun will not be offensive to those Rooms, nor will the Prospect be interrupted, but rendered more pleasant, whereas, were it on the West Side of the House, the Sun, by shining from the Object, and directly against those Rooms, would, by both, hinder the Prospect, and the Generality of Prospects are most pleasant when the Sun shines upon them.

Besides, there is another Inconvenience, if the Lawn be on the West Side of the House, it will give the more Way to the West Wind (which is commonly the greatest) to injure the House, by its having a free Passage to it.

If the Lawn be on the South Side of the House, it may do well enough, for the Reasons before-mentioned, for the Sun's Rays being then darted obliquely, will not much interrupt the Prospect, and the Sun shining most Part of the Day on that Side of the House, will still add to the Beauty of that Front, which ought

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to be the best Front in the House, therefore a Lawn on that Side will much help the Prospect of the House.

But the most desirable Aspect for a Lawn is that of the South East, which is generally the most favourable Point in *England*; and as the Sun rises upon the Front of the House facing this Point, so it will add a Cheerfulness to the Rooms in the Morning, and by Noon the Rays will be oblique to this Front, and in the Afternoon will have entirely left these Apartments.

It will not be at all convenient to have the Lawn on the North Side of the House, because it will lay the House too open to the cold North Winds, &c. therefore it will be more eligible to plant Wildernesses and Woods on the West and North Sides of the House, by Way of Screen to it.

As to the Figure of the Lawn, some recommend an exact Square, others an oblong Square, some an oval, and others a circular Figure; but neither of these are to be regarded, for it may be contrived so as to suit the Figure of the Ground; and as there should be Trees planted for shade on the Boundaries of the Lawn, so the Sides may be broken by irregular Plantations of Trees, for if there are not some good Prospects beyond the Lawn, it will be proper to have it bounded on every Side by Plantations, which may be brought round pretty near to each End of the House, so that Persons may soon get into Shade, which is a very desirable Thing in hot Weather, for where that is wanting, few Persons care to stir abroad when the Sun shines warm.

If in the Plantations round the Lawn, the Trees are placed irregularly, some breaking much forwarder on the Lawn than others, and not crowded too close together, they will make a much better Appearance than any regular Plantations can possibly do; and if there are Varieties of Trees properly disposed, they will have a good Effect; but it should be observed, that no other but those which make a fine Appearance, and that grow large, strait, and handsome, should be admitted here, as they are placed in the constant View from the House.

Many Persons have preferred the Lime Tree for this Purpose, on Account of their regular Growth; but as its Leaves often change their Colour, and begin to fall very soon in Autumn, occasioning a great Litter in the Garden; and from the End of July making but an indifferent Appearance, they are not to be esteemed for these Plantations.

The Elm, Oak, Beech, and Chestnut, among the deciduous Trees, are to be preferred to all others, as they keep their Leaves late in Autumn; and these are all of them large growing Trees, so are very proper for this Purpose.

If there are some Clumps of ever-green Trees intermixed with the deciduous Trees in this Plantation, it will add to the Beauty of it, especially in the Winter Season; the best Sorts for this Purpose are Lord *Weymouth's* Pine, the Silver and Spruce Firs, which will grow fast, and become large Trees; and as the two latter Sorts always grow pyramidically, they will have a good Effect to the Sight, when properly disposed with the deciduous Trees; but as these generally feather out their

their Branches near the Ground, they should be planted where they do not obstruct the View of any distant Objects.

But as most Persons who take Pleasure in beautifying their Seats in the Country, are in haste for Shade, they generally plant the Trees too close together, and often in such a Manner, as to render it difficult, when the Trees are advanced, to reduce their Number, without Injury to the Design; therefore those Trees should be first planted, which are designed to remain, and then there may be some few others planted for present Shade, which may afterward be taken away. When Persons who are beautifying their Seats meet with full grown Trees on the Spot, it is a great Pleasure, for these should not be destroyed, if they can possibly stand.

LAWSONIA. Lin. Gen. Pl. 433. Henna. Ludw. 143.

The Characters are,

The Flower has a small permanent Empalement, divided into 4 Parts at the Top. The Flower is composed of 4 oval Spear-shaped Petals, which spread open, and 8 slender Stamina the Length of the Petals, which stand by Pairs between them, terminated by roundish Summits. It hath a roundish Germen, supporting a slender Style, which is permanent, crowned by a beaded Stigma. The Germen becomes a globular Capsule, ending in a Point, having 4 Cells, filled with angular Seeds.

The Species are,

1. LAWSONIA ramis inermibus. Flor. Zeyl. 134. Lawsonia whose Branches have no Spines. *Ligustrum Egyptianum latifolium*. C. B. P. 476. Broad leaved Egyptian Privet, called Albenna, or Henna by the Arabians.

2. LAWSONIA ramis spinosis. Flor. Zeyl. 134. Lawsonia with prickly Branches. *Rhamnus Malabaricus* MAIL-ANSKI. Pluk. Alm. 38. Tab. 220. Malabar Buckthorn, called Mail-anski.

The 1st Sort grows naturally in India, Egypt, and other warm Countries, where it rises with a shrubby Stalk, 8 or 10 Feet high. The Branches come out by Pairs, opposite; these are slender, and covered with a whitish yellow Bark, and are garnished with oblong small Leaves, of a pale green, ending in acute Points, placed by Pairs opposite. The Flowers are produced in loose Bunches at the End of the Branches; they are of a gray or dirty white Colour, and are composed of 4 small Petals which turn backward at the Top. The Flowers are succeeded by roundish Capsules with 4 Cells filled with angular Seeds.

The Leaves of this Shrub are much used by the Egyptian Women to colour their Nails yellow, which they esteem an Ornament.

The 2d Sort grows naturally in both Indies, for I have received Specimens of it from the Spanish West-Indies, where it was found growing naturally in great Plenty.

This rises with a woody Trunk, 18 Feet high or more. The Wood is hard and close, covered with a light gray Bark. The Branches come out alternate, and are garnished with oblong oval Leaves, which stand without Order; and at the Joints where the Leaves are

placed, come out single strong sharp Thorns. The Flowers are produced in loose Bunches from the Side of the Branches; they are of a pale yellow Colour, and of a disagreeable Scent; they have 4 Petals, which spread open; between each of these are situated 2 pretty strong Stamina, terminated by roundish Summits. After the Flowers are past, the Germen becomes a roundish Capsule with 4 Cells, including many angular Seeds.

These Plants are both propagated by Seeds, which should be sown on a hot Bed early in the Spring, that the Plants when they come up may have Time to get Strength before Winter. When the Plants are fit to remove, they should be each planted in a small Pot filled with light sandy Earth, and plunged into a hot Bed of Tanners Bark, where they must be screened from the Sun till they have taken new Root, then their Treatment should be the same as that of the Coffee Tree with this Difference only, not to let these Plants have so much Water, but especially in the Winter, during which Season it should be given to them very sparingly, for by over watering these Plants, I have known many of them destroyed; these Plants are too tender to thrive in the open Air in England, so they must constantly remain in the Stove, but in hot Weather, they should have Plenty of free Air admitted to them.

LAYERS. Many Trees may be propagated by Layers, which do not produce Seeds here, so are not easily increased by any other Method.

This is to be performed by sitting the Branches a little Way, and laying them under the Mould about half a Foot; the Ground should first be made very light, and after they are laid, they should have a little Water given them.

If they do not comply well in the laying of them down, they must be pegged down with a Hook, or two, and if they have taken sufficient Root by the next Winter; they must be cut off from the main Plants, and planted in the Nursery, as is directed about Seedlings.

Some twist the Branch, or bare the Rind, and if it be out of the Reach of the Ground, they fasten a Tub or Basket near the Branch, which they fill with good Mould, and lay the Branch in it.

Laying of Trees.

This Operation is thus performed:

1st, Take some of the Boughs and lay them into the Ground about half a Foot deep in fine fresh Mould, leaving them with the End of the Layer about a Foot, or a Foot and a Half, out of the Ground, and keep them moist during the Summer Season, and they will probably have taken, and be fit to remove, in Autumn, and if they have not by that Time taken Root, they must lie longer.

2dly, Tie a Piece of Wire hard round the Bark of the Bough, at the Place you intend to lay in the Ground, and twist the Ends of the Wire, so that they may not untie, and prick the Place above the Wire, through the Bark, with an Awl in several Places, and then lay it in the Ground, as before directed.

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3dly, Cut a slip upwards at a Joint, as is practised in laying Carnations, which by Gardeners is called Tonguing the Layers.

4thly, Twist the Place that you design to lay in the Ground, like a Withy, and lay it into the Ground as directed in the first Way of Laying.

5thly, Cut a Place round about the Bough (that is designed to be laid) an Inch or two, at the Place that is most convenient to lay into the Ground, and manage it as is directed in the first Method of Laying.

The Season for laying hardy Trees, that shed their Leaves, is in *October*, but for such as are tender, in *March*; for Ever-greens, *June* or *August* are good Seasons.

Though Layers may be laid at any Time in the Year, the before-mentioned Seasons are most proper, for the Reasons following, because they have the whole Winter and Summer to prepare and draw Root, for at these Times of the Year the Sun has sufficient Power on the Sap of the Tree to feed the Leaf and Bud, but has not Power sufficient to make a Shoot.

And if that small Quantity of Sap that does arise be hindered, as it will by some of the preceding Ways of Laying, the Leaves and Buds will gently crave of the Layer, and by that Means will prepare the Layer to take Root, or put forth Roots a little to maintain itself, finding it cannot have it from the Mother Plant.

And therefore, because it wants but little Nourishment at that Time of the Year, it is better to lay Layers of Trees, or to set Cuttings, than at other Times, either in the Winter, when the Sap stirs but little, or in the Summer when the Sap abounds, or in the Spring when it begins to rise, because it is then apt to come too suddenly to draw Sap from the Layer, before the Layer has drawn or prepared for Root.

However, the Spring or Summer may do well for small Plants, because such Plants, being but short-lived draw Root the quicker.

If you would lay young Trees from a high Standard, the Boughs of which cannot be bent down to the Ground, then you must make Use of Osier Baskets, Boxes, or Pots, filled with fine-sifted Mould, mixed with a little rotten Willow Dust, which will keep Moisture to assist the Layer in taking Root; this Basket, Box, &c. must be set upon a Post, or Tressel, &c. and the Bough must be laid according to either of the four first Ways of Laying, but too much Head must not be left on, lest that be injured by the Wind, or by its own Motion rub off the tender Root, and the smaller the Boughs are, the less Way they should be left out of the Ground, and Care must be taken to keep them clear from Weeds.

The harder the Wood of the Tree is, the young Shoots will take Root best, but if the Wood be soft, the older Boughs will take Root the best.

There are many Kinds of Trees and Plants which will not put out Roots from their woody Branches, though laid down with the utmost Care, yet if the young Shoots of the same Year are laid in *July*, they will often put out Roots very freely, so that when any Plants are found difficult to propagate by Layers in the common Way, they should be tried at this Season; but as these Shoots will be soft and herbaceous, they must not have too much Wet, for that will cause them to rot,

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therefore it will be a better Method to cover the Surface of the Ground over the Layers with Moss, which will prevent the Ground from drying too fast, so that a little Water now and then will be sufficient.

LEAVES. A Leaf is defined to be a Part of a Plant extended into Length and Breadth, in such a Manner as to have one Side distinguishable from the other, they are properly the most extreme Part of a Branch, and the Ornament of the Twigs, and consist of a very glutinous Matter, being furnished every-where with Veins and Nerves; one of their Offices is, to subtilize and give more Spirit to the Abundance of nourishing Sap, and to convey it to the little Buds.

We shall first consider the Distinctions which are made by Botanists in their Definitions of the Shape and Form of Leaves in their Titles and Descriptions of Plants, and afterward consider their Uses in Vegetation.

The Leaf of a Plant, or Tree, is distinguished from that of Flowers, the first is called *Folium* in *Latin*, and the other *Petalum*, therefore what is to be understood here of Leaves, are those which are ranged on the Branches and Stalks of Plants, and have no Connection with the Flower.

These Leaves are either simple or compound.

Simple Leaves are those of which the Foot Stalk supports but one, compound are those of which the Foot Stalk sustains many.

Simple Leaves are distinguished by their Shape in the following Manner: Orbiculate, or round Leaves (*orbiculatum*) are such whose Breadth are equal to their Length, and every Part of their Edges equally distant from the Center, as in Fig. 1.

A roundish Leaf (*subrotundum*) differs from the former, by being either too long, or too broad, or prominent in one or more Parts, as in Fig. 2.

An oval, or Egg-shaped Leaf (*ovatum*) is longer than it is broad; the Base, or lower Part of it forms a Segment of a Circle, but the upper Extremity is not in Proportion, but smaller, as in Fig. 3.

An obverse oval Leaf is one whose Foot Stalk is fixed to its smaller End.

An oval, or elliptick Leaf (*ovale sive ellipticum*) is one whose Length exceeds its Breadth, and both Ends are equal, forming Segments of Circles, as Fig. 4.

A parabolical Leaf (*parabolicum*) is one whose Length exceeds its Breadth, and is narrowed from the Base upward, Fig. 5.

A spatulated Leaf (*spatulatum*) is of a roundish Figure, but narrow at the Base, and linearly lengthened, Fig. 6.

A Wedge-shaped Leaf (*cuneiforme*) is one whose Length exceeds the Breadth, and is narrowed to the Base, Fig. 7.

An oblong Leaf (*oblongum*) is one whose Length greatly exceeds its Breadth, and each Extremity is narrower than a Segment of a Circle, Fig. 8.

A Spear-shaped, or Spear-pointed Leaf (*lanceolatum*) is oblong, and grows narrower toward both Ends, and terminates in a Point, Fig. 9.

A linear Leaf (*lineare*) is one whose two Sides run almost parallel to each other; they are usually narrow, and

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and somewhat broader in the Middle than at the two Ends, Fig. 10.

Acerosum is when the linear Leaf stays on the Tree, and is ever-green, as in the Fir, Yew, &c. Fig. 11.

An Awl-shaped Leaf (*subulatum*) is one which is oblong and narrow, broadest at the Base, and thence gradually terminating in a Point, Fig. 12.

A triangular Leaf (*triangulare*) is composed of three rectilinear Sides and three Angles, Fig. 13.

A quadrangular and quinquangular Leaf, only differ from the former in the Number of their Sides, or Angles, Fig. 14.

A deltoide Leaf is one with four Angles, of which those of the Summit are farther distant from the Center than those of the Sides, Fig. 15.

A round Leaf (*rotundum*) is one without any Angles.

A Kidney-shaped Leaf (*reniforme*) is of a roundish Figure, hollowed a little at the Base, but without any Angles, Fig. 16.

A Heart-shaped Leaf (*cordatum*) is of an ovated Shape, hollowed a little at the Base, but without any Angles, Fig. 17.

A Moon-shaped Leaf (*lunulatum*) is one in Form of a Half-moon; it is a roundish Leaf, hollowed at the Base, with two curvilinear Angles in Form of Sickles, Fig. 18.

An Arrow-pointed Leaf (*sagittatum*) is one which is shaped like the Point of a bearded Arrow, it is triangular, and hollowed at the Base for the Insertion of the Foot Stalk, Fig. 19.

A Heart Arrow-shaped Leaf (*cordato-sagittatum*) is like the former, but the Sides of it are convex, Fig. 20.

A Spear-pointed Leaf (*bastatum*) is of a triangular Form, the Sides and Base of which are hollowed, so as to resemble a Leaf composed of three Parts, Fig. 21.

A Fiddle-shaped Leaf (*panduræ forme*) is oblong, larger at both Ends than in the Middle, the two Sides being compressed like the Body of a Violin, Fig. 22.

A cleft or divided Leaf (*fissum*) is divided by linear Sinuations and strait Margins; a two, three, or many pointed Leaf is of this Sort, divided into so many Parts, Fig. 23.

A lobated Leaf (*lobatum*) is one which is divided almost to the Midrib, into Parts which stand distant from each other, and are rounded at their Edges; according to the Number of these Parts, it is called bilobed, trilobed, or quadrilobed, &c. Fig. 24.

A handed Leaf (*palmatum*) is one which is divided into several unequal Segments down to the Base, where they are united, and resemble an open Hand, Fig. 25.

A Wing-pointed Leaf (*pinnatifidum*) is one which is transversely divided into oblong horizontal Divisions, Fig. 26.

A Lyre-shaped Leaf (*lyratum*) is one which is divided into transverse Segments, the upper ones being larger than the lower, Fig. 27.

A lacinated or jagged Leaf (*laciniatum*) is one whose Sides are variously divided in Jaggs, which are again divided without any Order, Fig. 28.

A sinuated Leaf (*sinuatum*) is one which has many Sinuations on its Sides, but is not indented or notched on its Edges, Fig. 29.

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An indented sinuated Leaf (*dentato-sinuatum*) is one like the former, but the Side Lobes are of a linear Figure.

A divided Leaf (*partitum*) is one which is divided into many Parts to the Base, so as to appear like many Leaves till closely examined. These are called *bipartite*, *tripartite*, &c. according to the Number of Parts, Fig. 30.

An entire Leaf (*integrum*) is one that is undivided, and has smooth Edges.

A truncated Leaf (*truncatum*) is one whose Summit seems as though it were cut off by a strait Line, in a transverse Direction.

A bitten Leaf (*præmorsum*) is one which is terminated by very blunt unequal Cuts, Fig. 31.

A retuse Leaf (*retusum*) is one whose Extremity is terminated by an obtuse Sinus, Fig. 32.

An indented Leaf (*emarginatum*) is one whose Extremity is a little indented, Fig. 33.

An obtuse Leaf (*obtusum*) is one whose Point is terminated bluntly, or by a Segment of a Circle, Fig. 34.

An acute Leaf (*acutum*) is one whose Point is terminated in an acute Angle, Fig. 35.

An acuminate Leaf (*acuminatum*) is one which is terminated by an Awl-shaped Point, Fig. 36.

A pointed obtuse Leaf (*obtusum acuminæ*) is one whose upper Part is rounded, but draws to an acute Point, Fig. 37.

A Clasper Leaf (*cirrbofum*) is one which terminates with a Tendril, Fig. 38.

A spinous Leaf (*spinosum*) is one whose Edge or Border ends with hard stiff Prickles, Fig. 39.

An indented Leaf (*dentatum*) is one whose Edge has horizontal Points of the same Consistence with the Leaf, but are separated from each other, Fig. 40.

A sawed Leaf (*ferratum*) is one whose Edges are sharply notched like the Teeth of a Saw, which make acute Angles bending toward the Top, Fig. 41.

A backward sawed Leaf (*retrorso-ferratum*) is one whose Serratures or Teeth, are bent toward the Base of the Leaf.

A double sawed Leaf (*duplicato-ferratum*) is one whose Edges are sawed with larger Teeth, and the Edges of these are again sawed in the same Manner.

A crenated Leaf (*crenatum*) is one whose Edges are indented with Indentures, which neither turn toward the Point nor Base. When these Indentings terminate obtusely, it is called obtuse crenated; when acutely, acute crenated; when the Indentures are again indented, it is called double crenated (*duplicato-crenatum*), Fig. 42.

A bowed Leaf (*repandum*) is one whose Margin has several obtuse Sinuses which are a little waved, Fig. 43.

A cartilaginous Leaf (*cartilagineum*) is one, whose Edge is furnished with a firm Cartilage of a different Substance with the Leaf, Fig. 44.

A ciliated Leaf (*ciliatum*) is one whose Edge is set with parallel Hairs, so as to resemble the Hairs of the Eye-lid, Fig. 45.

A torn Leaf (*laceratum*) is one whose Edges are cut into Segments of irregular Shapes.

A gnawed Leaf (*erosum*) is one which is sinuated, and

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and the Sinuses have their Edges again indented with small obtuse Sinuations, Fig. 46.

An entire Leaf (*integerrimum*) is one whose Margin is entirely free of all Notches or Indentures.

A viscous Leaf (*viscidum*) has its Superficies covered with a clammy Moisture which is not fluid.

A downy Leaf (*tomentosum*) is one whose Surface is covered with Hairs so short and fine, that the Eye does not distinguish them singly, though the Leaf is evidently downy both to the Sight and Touch, Fig. 47.

A woolly Leaf (*lanatum*) is one whose Surface is covered with a kind of woolly Substance, like the short Wool of Lambs.

A hairy Leaf (*pilosum*) has its Surface furnished with long distinct Hairs, Fig. 48.

A stinging Leaf (*bispidum*) is one whose Surface is covered with rigid Hairs, which either sting or prick on being touched, Fig. 49.

A rough Leaf (*scabrum*) is one whose Surface has on it several little irregular Prominences.

A prickly Leaf (*aculeatum*) is one whose Surface is covered with strong sharp Points or Thorns, which adhere lightly to the Surface.

A channelled Leaf (*striatum*) is when its Surface has a Number of parallel longitudinal Furrows.

A pimpled Leaf (*papillosum*) is one whose Surface has many little roundish Protuberances like Nipples, Fig. 50.

A punctuated Leaf (*punctatum*) is one whose Surface has many hollow Points dispersed over it.

A splendid Leaf (*nitidum*) is one whose Surface is smooth and shining, as if polished by Art.

A plaited Leaf (*plicatum*) is one which has several angular Risings and Hollows towards its Borders, as if folded up, Fig. 51.

A waved Leaf (*undulatum*) is one whose Surface toward the Edges, rises and falls convexly like the Waves of the Sea.

A curled Leaf (*crispum*) is when the Periphery of the Leaf grows larger than the Disk will admit, so that the whole Surface is raised in Waves, Fig. 52.

A rough Leaf (*rugosum*) is one whose Veins are contracted and sunk below the Disk, and the intermediate fleshy Parts rise in irregular Forms, so as to appear rough, Fig. 53.

A concave Leaf (*concauum*) is one whose Middle is sunk down or hollowed.

A veined Leaf (*venosum*) is one whose Veins are branched, and appear to the naked Eye.

A convex Leaf (*convexum*) is one whose Middle rises into a protuberant Form.

A nervous Leaf (*nervosum*) is when the Veins are extended Lengthways from the Base toward the Summit, without branching, Fig. 54.

A coloured Leaf (*coloratum*) is one which has other Colours than green.

A smooth Leaf (*glabrum*) is one whose Surface is smooth, without any Inequalities.

A taper Leaf (*teres*) is one of a thick Substance and cylindrical Form.

A half taper Leaf (*semicylindraceum*) is one which is of a cylindrical Form, flattened on one Side.

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A hollow Leaf (*tubulosum*) is one which is hollow like a Pipe, as those of the Onion.

A fleshy Leaf (*carnosum*) is one that is succulent or full of Pulp.

A compressed Leaf (*compressum*) is one whose marginal Sides are pressed, so that the Substance of the Leaf is larger than the Disk.

A Plane Leaf (*planum*) is one whose Surfaces are every where parallel.

A gibbous Leaf (*gibbum*) is one which is convex on both Sides, the Middle being fuller of Pulp.

A depressed Leaf (*depressum*) is one whose Disk is more depressed than the Sides.

A guttered Leaf (*canaliculatum*) is one which has a longitudinal deep Furrow, running through the Middle of the Leaf, and is almost cylindrical, Fig. 55.

A Sword-shaped Leaf (*ensiforme*) is one with thin Edges, with a prominent Rib running from the Base to the Point in the Middle.

A Faulchion-shaped Leaf (*acinaciforme*) is one which is fleshy and compressed, with one of its Edges convex and narrow, the other thick and strait, Fig. 56.

An Ax-shaped Leaf (*dolabriforme*) is one which is roundish, obtuse, and compressed, gibbous on the Outside, the Inside sharp edged, and taper below, Fig. 57.

A Tongue-shaped Leaf (*linguliforme*) is linear, fleshy, and obtuse, convex on the under Side, and has often cartilaginous Edges, Fig. 58.

A two-edged Leaf (*anceps*) is one which has two prominent Angles, running Lengthways on a convex Disk.

A three cornered Leaf (*triquetrum*) has three longitudinal plain Sides like an Awl-shaped Leaf.

A three edged Leaf (*trigonal*) is much like the former, but in this the Ribs are sharp and membranaceous, the Surface of the Leaf being channelled. When a Leaf has four or five Angles, it is called *tetragonal* and *pentagonal*, &c.

A furrowed Leaf (*fulcatum*) is one that has several Ridges running Lengthways, which have obtuse Sinuses, Fig. 59.

A Keel-shaped Leaf (*carinatum*) is one that has the under Part of the Disk prominent the whole Length, and the upper Concave like the Keel of a Boat.

A membranaceous Leaf (*membranaceum*) is one wholly composed of Membranes, without any apparent Pulp between.

A compound Leaf (*compositum*) in general means one, which is formed of several small Leaves standing upon one Foot Stalk, but these Leaves are divisible again to the Structure and Position of the small Leaves.

1st, Into such as are properly and distinctly called compound Leaves; 2dly, the *decompound*; 3dly, the *supradecomponent*, of each of these in its Place.

In describing these Kinds of Leaves, the whole Leaf which is the Result of the Combination, is considered as one Leaf, called (*folium*) and the small Leaves which together compose it (*folioli*) or Lobes.

A simple compound Leaf, is one whose simple Foot Stalk bears more than one Leaf.

A jointed one (*articulatum*) is when one Leaf grows out of the Point of another, Fig. 60.

A fin-

A fingered Leaf (*digitatum*) is one which is composed of several small Leaves joining to one Foot Stalk at their Base, spreading open like the Fingers of a Hand, Fig. 61.

A two lobed Leaf (*binatum*) is one with two small Leaves on one Foot Stalk, Fig. 62.

A three lobed Leaf (*ternatum*) is one with three small Leaves, which is frequently called a *trifoliate* Leaf, Fig. 63.

A cinquefoil Leaf (*quinatum*) has five small Leaves on the same Foot Stalk.

A winged Leaf (*pinnatum*) is one which has many small Leaves, ranged on each Side a single Foot Stalk like Wings; of these there are several Kinds.

An unequal winged Leaf (*pinnatum cum impari*) is a winged Leaf, terminated by an odd Lobe or (*folioli*), Fig. 64.

A Clasper winged Leaf (*pinnatum cum cirrho*) is a winged Leaf ending with a Tendril or Clasper, Fig. 65.

An abrupt winged Leaf (*abruptum*) is a winged Leaf not terminated by an odd Lobe or Clasper, Fig. 66.

An opposite winged Leaf (*opposite pinnatum*) is when the small Leaves or Lobes, are placed opposite on the Mid-rib.

An alternate winged Leaf (*alternatim pinnatum*) is when the small Leaves stand alternate.

An interrupted winged Leaf (*interruptè pinnatum*) is when there are smaller Lobes intermixed with larger upon the same Mid-rib, Fig. 67.

A jointed winged Leaf (*articulatè pinnatum*) is when the common Foot Stalk is jointed, Fig. 68.

A running winged Leaf (*decurssè pinnatum*) is one whose small Leaves run along the Foot Stalk from one to another, Fig. 69.

A conjugated Leaf (*conjugatum*) is one which has but two small Leaves on the same Foot Stalk.

We next proceed to the decomposed Leaves.

A decomposed Leaf (*decompositum*) is one whose Foot Stalk is divided, and joins together many small Leaves.

A double conjugated Leaf (*bigeminatum*) is one whose Foot Stalk divides in Pairs, and corrects four small Leaves on the Top, or it is composed of two Conjugations.

A double trifoliate Leaf (*bitermatum*) is one whose Foot Stalk is divided, and each Division sustains three small Leaves, Fig. 70.

A double winged Leaf (*bipinnatum*) is one whose Foot Stalk is divided, and these Divisions have small Leaves ranged on their Side like Wings, Fig. 71.

A footed or branched Leaf (*pedatum*) is one whose Foot Stalk is divided, and has some small Leaves placed on the inner Side, Fig. 72.

A greater compounded Leaf (*supra decompositum*) is one whose Foot Stalk is many Times divided, and each Division is garnished with small Leaves.

A triternate Leaf (*triternatum*) is one whose Foot Stalk connects three double trifoliate Leaves.

A triple winged Leaf (*tri-pinnatum*) is one composed of several double winged Leaves; if these are terminated by two small Leaves, they are said to be abrupt, Fig. 73. but when they are terminated by an odd one,

they are called an irregular, triple, winged Leaf, Fig. 74.

We next come to consider the Distinctions of Leaves from their Place, Position, Infertion, or their Direction, when joined to the other Parts of Plants.

A Seed Leaf (*feminale*) is the first Leaf of the Plant, and is what before was called *cotyledones*, these are different in Form and Substance from the other Leaves, Fig. 75.

A Bottom Leaf (*radicale*) is one whose Foot Stalk rises immediately from the Root.

An upper Leaf (*caulinum*) is one which grows from the Stalk of the Plant, Fig. 76.

An axillary Leaf (*axillare*) is one which grows from the Infertions of the Branches, Fig. 77.

A Flower Leaf (*florale*) is one that is inserted near the Flower, and never appears but with it, Fig. 78.

A starry Leaf (*stellate*) Fig. 79. or whorled Leaf (*verticillata*) is when several Leaves are disposed in Whorls round the Stalk, Fig. 80.

Opposite Leaves (*opposita*) are when they stand by Pairs on each Side the Stalk, Fig. 81.

Alternate Leaves (*alterna*) are when they stand alternate above each other, Fig. 82.

Sparfed Leaves (*sparsa*) are such as stand without Order over the whole Plant.

Cluster Leaves (*conferta*) are such as come out from the Side of the Branches in Clusters, and are so close to one another, that it is not easy to discover their exact Situation, Fig. 83.

Imbricated Leaves (*imbricata*) are such as are placed over each other like Tiles on a House, or the Scales of Fishes, Fig. 84.

Fasciculated Leaves (*fasciculata*) are such as grow in Bunches from the same Point, Fig. 85.

Disticha is when the Leaves are ranged along only upon two Sides of the Branches, as in the Fir Tree.

A Target-shaped Leaf (*peltatum*) is one whose Foot Stalk is fixed to the Disk, and not to the Base or Edge of the Leaf, Fig. 86.

Petiolatum is when the Foot Stalk is inserted to the Base of the Margin, Fig. 87.

Sessile is when the Leaf sits close to the Stalk or Branch, and has no Foot Stalk, Fig. 88.

A running Leaf (*decurrens*) is when the Leaf adheres to the Stalk or Branch, and is extended along the Stalk from the Base, so as to form a leafy Border on each Side the Stalk, Fig. 89.

Amplexicaule is when the Base of the Leaf environs or embraces the Sides of the Stalk entirely, Fig. 90.

Semiamplexicaule, is when the Base of the Leaf reaches but half round the Stalk.

A perfoliate Leaf (*perfoliatum*) is one which is perforated by the Stalk or Branch, which do not touch the Margin, Fig. 91.

Connatum, is when the two opposite Leaves cohere at their Base, so as to form one Body embracing the Stalk, Fig. 92.

Vaginant, is when the Base of the Leaf forms a Kind of Cylinder, embracing the Stalk like a Sheath, as in Corn, Grass, &c. Fig. 93.

The Direction of Leaves.

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An adverse Leaf (*adversum*) is one whose Sides respect the Meridian and not the Heavens, as the Ginger, &c.

An oblique Leaf (*obliquum*) is when the Base of the Leaf regards the Sky, and the Summit the Horizon.

An inflexed or incurved Leaf (*inflexum*) is one which grows in Form of a Bow, turning its Point toward the Stalk again, Fig. 94.

Adpressum, is when the Disk of the Leaf approaches near the Stalk.

An erect Leaf (*erectum*) is one so situated, as to make a very acute Angle with the Stalk, Fig. 95.

Patens, is when the Leaf does not make so acute an Angle with the Stalk as the former, and yet does not stand horizontal, Fig. 96.

An horizontal Leaf (*horizontale*) is one which stands perfectly at right Angles with the Stalk, Fig. 97.

A reflexed Leaf (*reclinatum*) is one whose Summit is lower than the Base, Fig. 98.

A revolved Leaf (*revolutum*) is one whose upper Part is rolled downward, Fig. 99.

A dependent Leaf (*dependens*) is one whose Summits point to the Earth.

A rooting Leaf (*radicans*) is one which puts out Roots.

A floating Leaf (*natans*) is one which floats on the Surface of the Water, as the Water Lily, &c.

Demersum, is used to express a Leaf sunk below the Surface of the Water.

Having explained the several Forms of Leaves, by which Botanists distinguish them, and also their Position, both in Regard to the other Parts of the Tree, or Plant, and that of the Earth, we shall next proceed to their Structure and Uses, for these were not designed by the wise Creator, only for Ornament, but they are of more important Use in Vegetation, and are as variously constructed in their several Parts, as their several Uses for which they are designed.

Some Plants have very thick fleshy Leaves, whose pulpy Substance is always moist; these are such Plants as naturally grow upon dry barren rocky Places, and for the most Part are Natives of warm Countries; and as these perspire very little in Comparison of most other Plants, they are adapted to grow in such Places where they can receive very little Nourishment from the Earth. Most of the Leaves of these Plants have a thin compact Skin over their Surface, with very small minute Pores, whereby the descending Moisture is thrown off, which, if admitted into the Substance of the Leaves, or Stalks, would in a very short Time cause a Mortification, and destroy the Plant.

The Leaves of all those Trees and Shrubs which continue their Verdure all the Year, have also a thin compact Skin, or Cover, over their Surfaces, as is easily discovered by macerating them in Water, in order to separate the Parenchyma from the Vessels of the Leaves, which cannot be effected in any of these Evergreens, until the thin Parchment-like Cover is taken off; these Trees and Shrubs are found, by Experiment, to imbibe and perspire but little in the same Space of Time, when compared with the deciduous Trees and Shrubs; and it is principally owing to this close Covering, as also to the small Proportion of Moisture contained in their Vessels, that they retain their Verdure, and continue

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through the Winter on the Trees. The nutritive Juices of these Plants always abound more or less with an oily or terebinthinous Quality, which secures them from the Injury of Frost, so that many of these evergreen Trees are adapted to grow in the coldest Parts of the habitable World.

In all the Leaves of Trees and Plants which I have examined, there are two Orders of Veins or Nerves, one belonging to each Surface, and I have generally observed, that the lower Lamina on the under Side of the Leaf, had the Ramifications larger, and were capable of admitting a Liquid to pass through them, which those of the upper Surface would not; these two Orders of Veins are inscuated at several places, but not so closely connected, but that they may be easily separated, after they have been macerated in Water a proper Time, for some Leaves require a much longer Time than others, to render the Parenchyma soft enough to separate easily from the Veins without tearing them.

These two Laminæ, or Orders of Veins, are supposed to be destined for different Purposes; the upper Lamina is thought to be Air Vessels, or Tracheæ, through which the perspiring Matter is protruded, and by which the Air is inspired; that these are Pores through which that Substance passes, which is thrown out of the Plants, is pretty evident, for the clammy Substance which is commonly called Honey Dew, is always found sticking to the upper Surface of Leaves, from whence many have supposed that this Substance fell from above, and lodged upon the Leaves in the Night. This is the Manna which is collected from Ash Trees in Calabria, and from the *Albagi* in Persia, &c. and is no other than the nutritive Juices, or a Substance separated from that, which issues from the Pores of the Leaves, and is concentered on the Surface of the Leaves by the cold Air; but whenever this is found in Quantity upon the Leaves, it is a sure Sign of a diseased Plant.

The lower Lamina of Veins are supposed to be destined for another Purpose, which is that of receiving, preparing, and conveying the Moisture imbibed from the rising Vapours of the Earth, by which Trees and Plants are greatly nourished; and for this Use we see how differently the two Surfaces are formed, the upper one is commonly smooth and lucid, and the under is frequently covered with Hairs, or a soft Down, the better to stop and detain the rising Vapours, and transmit them to the inner Vessels; and where the Structure of the Leaves are different, it is found by Experience, that their Functions alter; for those Leaves, whose upper Surfaces are garnished with Down, or Hairs, are found to be the Receivers and Conveyers of the Moisture, and not the under ones, as in the other Plants.

If the Surfaces of these Leaves are altered, by reversing the Branches on which they grow, the Plants are stopped in their Growth, until the Foot Stalks are turned, and the Leaves recover their former Position. This shews how necessary it is to support all those weak Shoots of Plants, which are naturally disposed for upright Growth, and that either twine about the neighbouring Trees for Support, or that put out Claspers, by which they take hold of whatever Trees, or Plants grow near them, and are thereby supported; and, on the contrary, how absurd is that Practice of tying up the Shoots

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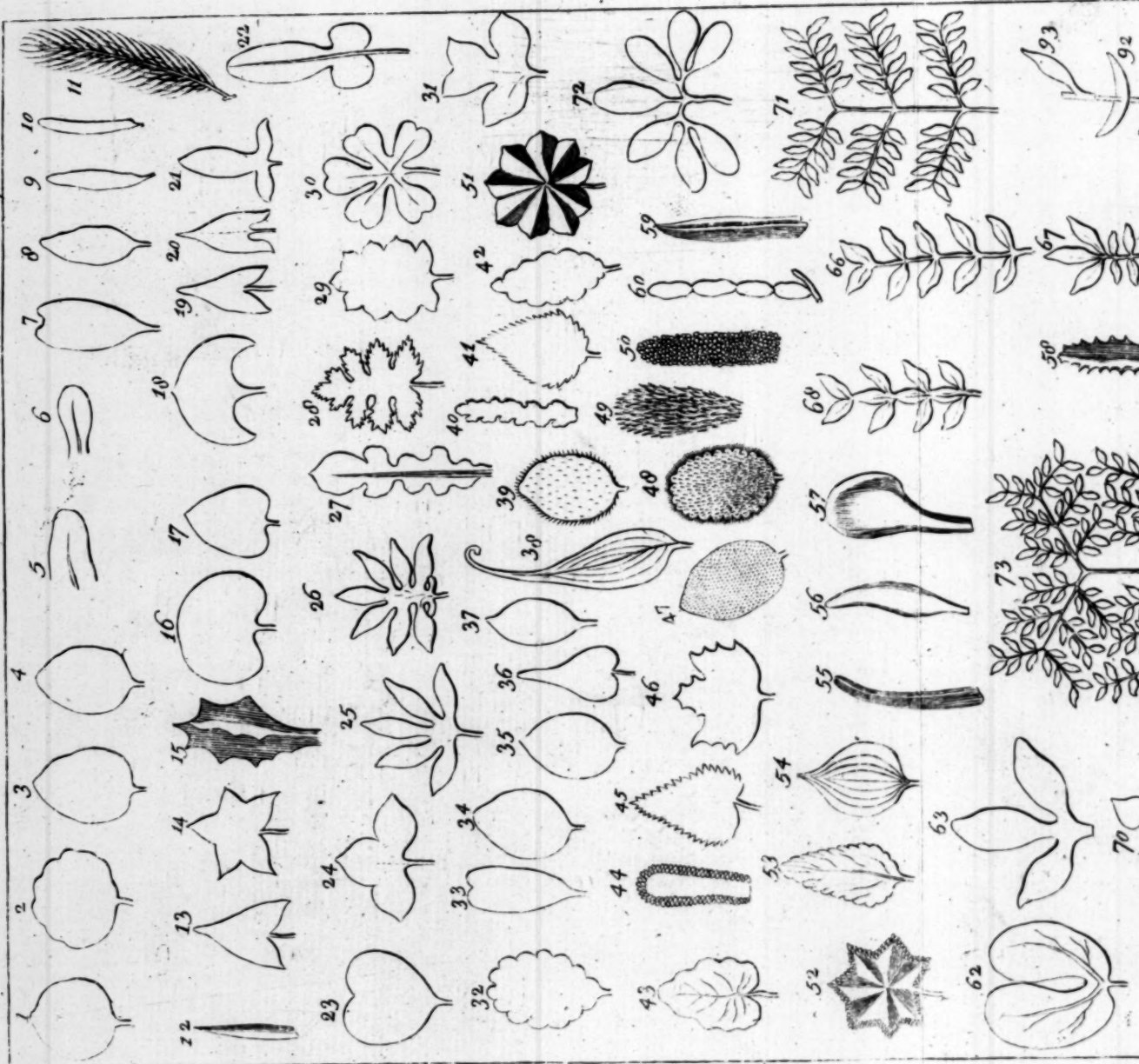
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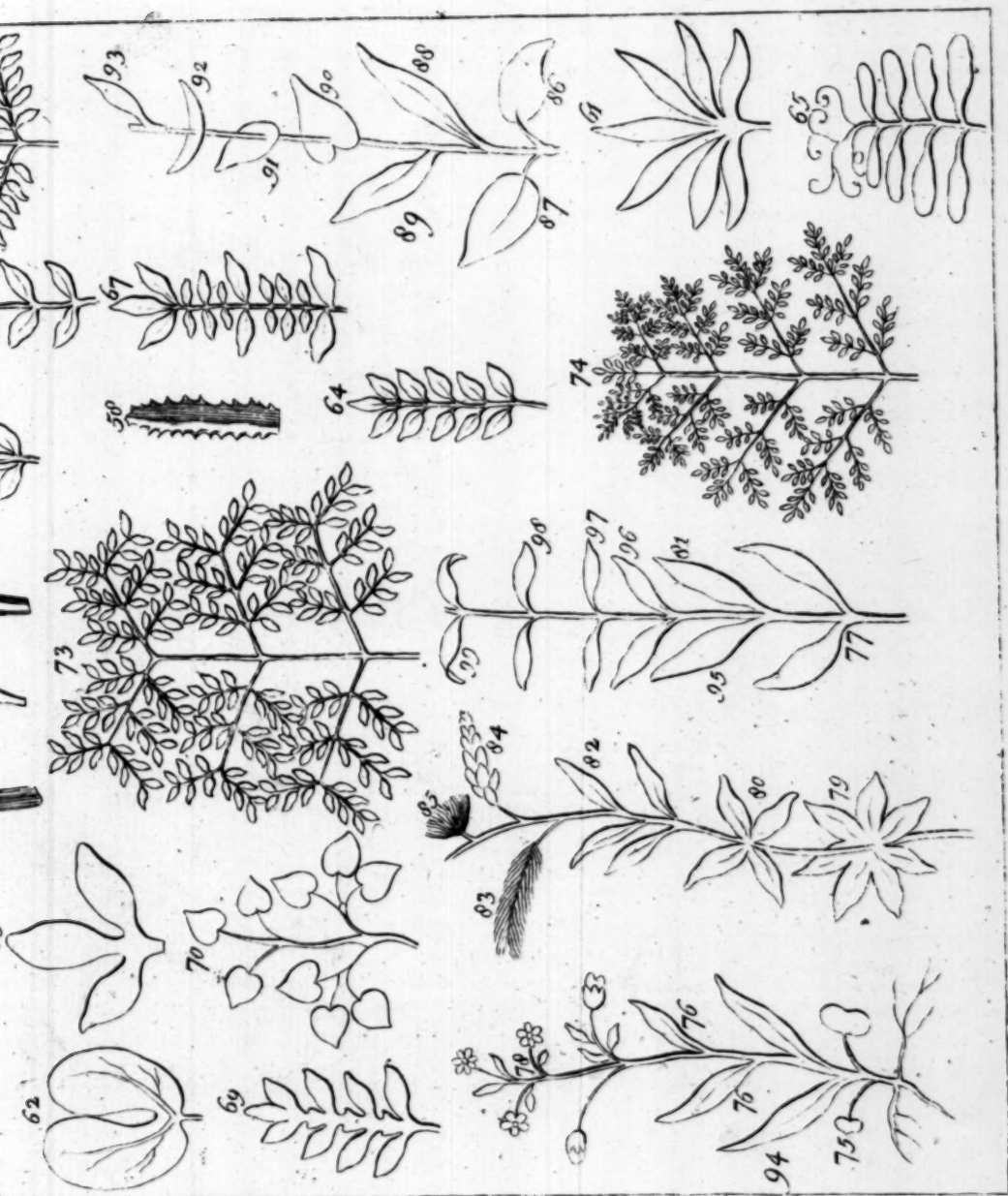
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of those Plants which are naturally disposed to trail upon the Ground, for, in both these Cases, Nature is reversed, and consequently the Growth of both Sorts of Plants is greatly retarded.

This is one of the great Functions for which the Leaves of Trees and Plants are designed; but, besides this, there are others of equal Importance to the well being of Plants and Fruits; the first is that of the Foot Stalks of Leaves nourishing and preparing the Buds of the future Shoots, which are always formed at the Base of these Foot Stalks, and during the Continuance of the Leaves in perfect Health, these Buds increase in their Magnitude, and, in the deciduous Trees, are brought to Maturity before the Foot Stalks separate from the Buds in Autumn, but if by Accident the Leaves are blighted, or if the entire Surface of the Leaves are cut off, and the Foot Stalks are left remaining, yet the Buds will decay for Want of that proper Nourishment which is conveyed to them from the Leaves, so that whenever Trees are divested of their Leaves, or those Leaves are cut, or otherwise impaired, though it may in either Case happen when the Buds may be nearly formed; yet if it is before the Foot Stalks separate naturally from the Branches, the future Shoots will be weakened in Proportion to the Time when this is done; therefore as from all the Experiments which have been made in Order to know how serviceable the Leaves of Trees and Plants are to their well being, it has been found, that where the Plants have been divested of their Leaves, or their Leaves have been eaten, or cut, during their Growth, the Plants have been remarkably weakened thereby. This should teach us not to pull, or cut off the Leaves of Trees, or Plants, on any Account, while they retain their Verdure, and are in Health. As also how absurd that common Practice is, of feeding down Wheat in the Winter and Spring with Sheep; for by so doing, the Stalks are rendered very weak, and the Ears are in Proportion shorter, nor are the Grains of Corn so plump and well nourished, as that which is not fed down upon the same Ground; this is a Fact which I can assert from many Years Experience, for when Corn, or Grass, is fed down close to the Root, the succeeding Blades will be much finer than if the first Leaves had been left remaining, which is evident from all Sheep Pastures, where the Grass is much finer and shorter than in other Places, as also upon Lawns and Bowling-greens, where the Grass is often mowed, the Blades will be rendered finer in Proportion to the Frequency of mowing it, yet the Species of Grass is the same with that on the richest Pastures, so that although this may be a desirable Thing for Lawns, &c. in Gardens, yet where Regard is had to the Produce, this should be avoided.

Besides these, there are other Uses for which Leaves are designed, one of which is that of shading the Buds for the future Shoots from the Sun, which would exhale and dry up all their Moisture, as also the shading of the young Fruit, which is absolutely necessary during the Time of their Growth; for I have suspended the Leaves of Trees which were growing against Walls, so as to expose the Fruit to the Sun, and not taken any of them off the Branches, yet I have always found those Fruits so exposed, have been greatly stunted in their Growth, and have never arrived to near the Size of others above

and below them on the same Branches, nor were they so well tasted, or replete with Juice.

In making of this Experiment, I was as careful as possible not to reverse the Surfaces of the Leaves, having been thoroughly convinced, from many repeated Experiments, how prejudicial that is to all Plants, but notwithstanding this Precaution, the Event was as before mentioned.

Another principal Use of the Leaves is to throw off by Transpiration, what is unnecessary for the Growth of the Plants, answering to the Discharge made by Sweat in Animal Bodies; and as Plants receive and transpire much more, in equal Time, than large Animals, so it appears how necessary the Leaves are to preserve the Plants in perfect Health, for it has been found by the most exact Calculations, made from repeated Experiments, that a Plant of the Sun Flower receives and perspires, in twenty-four Hours seventeen Times more than a Man.

As Naturalists have generally ascribed a four-fold Use to Leaves, I shall beg Leave to mention them here, and then shall give an Account of the most accurate Experiments which have been made to ascertain the Truth of their Hypotheses.

1. Chiefly, that they do in the Spring Time receive the crude Humours into themselves, divide them very minutely, and move them strongly in the Utricles, and perhaps draw in from the Air what is necessary, though unknown to us, and carry back great Plenty of elaborated Juice to the Plant.

2. That there may be a Transpiration of what is unprofitable, answering to the Discharge made by Sweat; for sometimes those excretory Vessels of the Leaves are so over-charged by the great Plenty of distending Humour [Juice,] that they burst in the Middle, and let go the more subtle Parts; nor is it seldom, that, in a hot Season, great Plenty of Juices are this Way discharged and imbibed. Thus Manna is found to exude (sweat forth) from the Leaves of certain Trees, if a cold Night should follow a hot Day; and the same Thing frequently happens in divers other Plants and Trees, as we learn from the Bees flying to the Lime Tree, that they may gather that gumous Substance from their Leaves, and it is from the Surfaces of the Leaves, as well as from the Flowers, those Animals collect their Honey; but if the Heat should be less, all the superfluous Humours, except those which, perhaps, are transmitted by insensible Transpiration through the arterial Vessels, exhaling naturally, are seen to return into the Trunk.

3. That the bibulous Vessels, dried by the diurnal Heat, and for this Reason to be compared to Veins, may imbibe, in the Night Time especially, those watry Parts, which, among others, lie hid in the Air under the Form of a very thin Dew, and so make Amends for the Loss made by the Arteries, by the new Moisture received.

4. Lastly, the Leaf serves chiefly for this Purpose, that it may keep and nourish the Eye, or Gem, until the Gem, by Degrees growing out to a greater Bulk, presses together the Vessels of the Foot Stalk, from whence the Humour is by little and little stopped in the Leaf, till it cannot any more return to the Foot Stalk, which, by the ceasing of the Afflux and Reflux of the

nutritious Juice, grows putrid, whence a Consumption being caused, the Leaf dies, and falls off, which is the chief Cause of the falling of the Leaves in Autumn.

The Rev. Dr. Hales, in his excellent Treatise of *Vegetable Statics*, speaking of the Perspiration of Plants, gives an Account of the following Experiments, viz.

That in *July* or *August* he cut off several Branches of Apple Trees, Cherry Trees, Pear Trees, and Apricot Trees, two of a Sort; they were of several Sizes, from three to six Feet long, with proportional lateral Branches, and the transverse Cut of the largest Part of the Stems was about an Inch Diameter.

That he stripped off the Leaves of one Bough of each Sort, and then set their Stems in several Glasses, pouring in known Quantities of Water.

The Boughs with Leaves on them imbibed some fifteen Ounces, some twenty, twenty-five, or thirty, in twelve Hours Day, more or less, in Proportion to the Quantity of Leaves they had, and when he weighed them at Night, they were lighter than in the Morning.

While those without Leaves imbibed but one Ounce, and were heavier in the Evening than in the Morning, they having perspired little.

The Quantity imbibed by those with Leaves decreased very much every Day, the Sap Vessels being probably shrunk at the transverse Cut, and too much saturate with Water to let any more pass, so that usually in four or five Days the Leaves faded and withered much.

He adds, that he repeated the same Experiments with Elm Branches, Oak, Osier, Willow, Sallow, Aspen, Currant, Gooseberry, and Filbert Branches, but none of these imbibed so much as the foregoing, and several Sorts of Ever-greens very much less.

He adds also another Experiment: That on the 15th of *August*, he cut off a large Pippin with two Inches Stem, and its twelve adjoining Leaves; that he set the Stem in a little Phial of Water, which imbibed and perspired in three Days, one Third of an Ounce.

And that at the same Time he cut off from the same Tree another bearing Twig of the same Length, with twelve Leaves, no Apple on it, which imbibed in the same three Days near three Fourths of an Ounce,

That about the same Time, he set in a Phial of Water a short Stem of the same Tree, with two large Apples on it, without Leaves, and they imbibed near three Fourths of an Ounce in two Days.

So in this Experiment, the Apples and Leaves imbibed four Fifths of an Ounce, the Leaves alone near three Fifths, but the two large Apples imbibed and perspired but one third Part so much as the twelve Leaves, then the one Apple imbibed the one sixth Part of what was imbibed by the twelve Leaves; therefore two Leaves imbibe and perspire as much as one Apple: whence their perspirations seem to be proportionable to their Surfaces, the Surface of the Apple being nearly equal to the Sum of the upper and under Surfaces of the two Leaves.

Whence it is probable, that the Use of these Leaves (which are placed just where the Fruit joins to the Tree) is to bring Nourishment to the Fruit.

And accordingly he observes, that the Leaves next adjoining to the Blossoms are in the Spring very much expanded, when the other Leaves on barren Shoots are

but beginning to shoot, and that all Peach Leaves are very large before the Blossom goes off.

And that, in Apples and Pears, the Leaves are one Third, or half grown, before the Blossom opens, so provident is Nature in making timely Provision for the nourishing the yet Embryo Fruit.

He also adds another Experiment: He stripped the Leaves of an Apple Tree Branch, and then fixed the great End of the Stem in the Gage, it raised the Mercury $2 + \frac{1}{2}$ Inches, but it soon subsided, for Want of the plentiful Perspiration of the Leaves, so that the Air came in almost as fast as the Branch imbibed Water.

And as a farther Proof of the Influence of the Leaves in raising the Sap, he also made the following Experiment.

On the 6th of *August*, he cut off a large Russet Pippin, with a Stalk $1 + \frac{1}{2}$ Inch long, and twelve adjoining Leaves growing to it.

He cemented the Stalk fast in the upper End of a Tube, which Tube was six Inches long, and one Fourth Diameter; as the Stalk imbibed the Water, it raised the Mercury four Inches high.

That he fixed another Apple of the same Size in the same Manner, but first pulled off the Leaves, and it raised the Mercury but one Inch; that in the same Manner he fixed a like bearing Twig, with twelve Leaves on it, but no Apple, and it raised the Mercury three Inches.

He then took a like bearing Twig, without either Leaves or Apple, and it raised the Mercury one Fourth of an Inch.

So a Twig, with an Apple and Leaves, raised the Mercury four Inches; one with Leaves, only three Inches; one with an Apple without Leaves, only one Inch.

A Quince, which had two Leaves just at the Twig's Insertion, raised the Mercury $2 + \frac{1}{2}$ Inches, and held it up a considerable Time.

A Sprig of Mint, fixed in the same Manner, raised the Mercury $3 + \frac{1}{2}$ Inches, = to 4 Feet 5 Inches Height of Water.

These, and many more Experiments of the Rev. Dr. Hales, that curious Enquirer into the Causes, State, and Progress of Vegetation, evidently shew the great Perspiration of the Leaves of Plants, and their great Use in raising the Sap, and other Functions of vegetable Nature; to whose excellent Treatise before-mentioned I refer the curious Enquirer.

I shall add, That Nature has directed us as to the true Distance we ought to train the Branches of Trees against Walls or Espaliers, which should always be in Proportion to the Size of their Leaves, for if we regard her Progress in the great Varieties of Trees, which are within our Observation, we shall always find their Branches grow distant from each other in Proportion to the Breadth of their Leaves; and it was upon this Account that the Romans so much admired the *Platanus*, because the Leaves, being large, afforded them a kindly Shade in Summer, but in Winter, when they are destitute of Leaves, their Branches growing at a great Distance, easily admitted the Beams of the Sun.

I shall next beg Leave to mention a few, out of the many

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many Experiments which have been made by *Monf. Bonnet*, of *Geneva*, to prove that most Leaves imbibe the Moisture of the Air on their under Surface, and not from their upper; they are as follow.

He gathered the Leaves of sixteen Sorts of herbaceous Plants when fully grown, of each he put several Leaves upon the Surface of Water in Glass Vases, some were posited with their upper Surface, and others with their under Surface upon the Water; these were adjusted exactly to the Surface of the Water, with great Care not to let any Moisture reach their opposite Surfaces, and the same Care was taken to prevent their Foot Stalks from receiving any Moisture. The Glasses in which these Leaves were thus placed, were kept in a Closet, where the Air was very temperate; and as the Water in the Glasses evaporated, there was from Time to Time a Supply of fresh, which was added with a Syringe, so that the Leaves were not disturbed. The Leaves were taken from the following Plants; the Plantain, the Mullein, the Wake Robin, the great Mallow, the Nettle, the Marvel of *Peru*, the Kidney Bean, the Sun Flower, the Cabbage, the Balm, the Cockscorn, the purple leaved Amaranth, Spinach, and the smaller Mallow.

Six of these Sorts he found continued green a long Time, and these were with different Surfaces upon the Water, they were of the following Sorts, the Wake Robin, the Kidney Bean, the Sun Flower, the Cabbage, the Spinach, and small Mallow; among the others the following Sorts were found to draw the Moisture better with their upper Surface than their under, the Plantain, the Mullein, the great Mallow, the Nettle, the Cockscorn, and the purple Amaranth.

The Leaves of the Nettle whose under Surface was upon the Water, were decayed in three Weeks, whereas those whose upper Surface was next the Water continued two Months.

The Leaves of Mullein, whose under Surface was next the Water, did not continue fresh more than five or six Days, but those whose upper Surface was next the Water lasted five Weeks.

The Leaves of the purple Amaranth, whose upper Surface was next the Water, continued fresh three Months, whereas those whose under Surface was next the Water were decayed in a Week.

The Leaves of the Marvel of *Peru* and the Balm, appeared to have the Advantage, whose under Surfaces were next the Water.

The Leaves of Wake Robin and of the Cockscorn, whose Foot Stalks only were put into the Water, continued fresh a longer Time, than those which were placed with either Surface next the Water.

The Leaves of the Great Mallow, the Nettle, the Sun Flower, the Marvel of *Peru*, and Spinach, whose Foot Stalks were plunged in the Water, continued fresh a shorter Time, than those which had either of their Surfaces next the Water.

The Leaves of the Mullein, of Plantain, and Amaranth, which received the Water at their Foot Stalk, continued fresh much longer than those, whose under Surface was next the Water.

It is not difficult to explain the Reason of this Fact, for the Orifices of the Sap Vessels in the Foot Stalk, are

much larger than those of either Surface, so that the Moisture insinuates in greater Quantities and with more Ease, the first than by the second Way.

After this the same Gentleman made Experiments on the Leaves of sixteen Sorts of Trees and Shrubs of the following Sorts, the Lilac, the Pear Tree, the Vine, the Aspen, the Laurel, the Cherry Tree, the Plum Tree, the Horse Chestnut, the White Mulberry, the Lime Tree, the Poplar, the Apricot, the Walnut, the Filbert, the Oak, and the Creeper.

Among these Species, he found that the Lilac and the Aspen imbibed the Moisture on their upper Surface, equally with the under Surface; but in all the other Sorts, the under Surface imbibed it in much greater Quantities than the opposite. The Difference was very remarkable in the Leaves of the White Mulberry, for those whose upper Surface was laid upon the Water, faded in five Days, whereas the other whose under Surface was next the Water, preserved their Verdure near six Months.

The Vine, the Poplar, and Walnut Tree, are very remarkable Instances, how little disposed the upper Surfaces of the Leaves of ligneous Plants are to imbibe the Moisture; for those of these three Sorts, whose upper Surfaces were applied to the Water, decayed almost as soon as those which had no Nourishment.

In all the Experiments made by this curious Gentleman upon the various Leaves of Trees and Herbs, it is remarkable, that all those Leaves which imbibed the Moisture by their upper Surface, were such as had that Surface covered either with Hairs or Down; and on the contrary, where the under Surface was garnished with either Hairs or Down, the Moisture was imbibed by that Surface. He likewise mentions many Experiments made by himself, and also by *Monf. du Hamel de Monceau*, of the Royal Academy of Sciences at *Paris*, in rubbing the Leaves over with Varnish, Oil, Wax, and Honey, to see the Effect of these upon various Leaves, some of which were rubbed over on both Surfaces, others only upon one; some only a Part of the Surface, others the Edges of the Leaves were rubbed over, and in some only the Foot Stalks of the Leaves were rubbed with these. They likewise anointed the Trunks of some Trees and Shrubs, and left the Leaves and Branches in their natural State.

The Result of these Experiments was, that where the Leaves were anointed on both Surfaces with Varnish, they decayed presently; and where they were anointed with the other Things, in Proportion as those were most penetrating, so the Leaves continued a shorter Time than the others; and where one Surface only was anointed, they continued much longer than those which were anointed on both; and where the Pedicle only was anointed they continued still longer; but the anointing of the Trunks, made no sensible Alteration, excepting in very hot Weather; when they both imagine, that the anointing them was of Service, by hindering the too great Transpiration which might weaken the Trees; for they observed, that those Trees which were varnished, suffered less from the violent Heat, than the Trees which were left in their natural State.

Monf. Bonnet also observed, that on those Leaves which were varnished, the tender Parts of the Leaves were destroyed by it, and the tough Fibres only were left remaining.

As it would swell this Work much beyond its intended Bulk, were I to mention more of these curious Experiments, I shall refer the Curious to his Book, where they will find a great Number of the most accurate and well conducted Experiments related, to ascertain the Uses of the Leaves of Plants in Vegetation.

The before-mentioned Rev. Dr. Hales, in his Treatise of *Vegetation*, says, It is plain from many Experiments and Observations he had before-mentioned, that Leaves are very serviceable in this Work of Vegetation, by being instrumental in bringing Nourishment from the lower Parts, within the Reach of the Attraction of the growing Fruit, which, like young Animals, is furnished with proper Instruments to suck it thence; but the Leaves seem also designed for many other noble and important Services, for Nature admirably adapts her Instruments, so as to be at the same Time serviceable to many good Purposes.

Thus the Leaves, in which are the many excretory Ducts in Vegetables, separate and carry off the redundant watery Fluid, which, by being long detained, would turn rancid, and prejudicial to the Plant, leaving the more nutritive Parts to coalesce; Part of which Nourishment, we have good Reason to think, is conveyed into Vegetables through the Leaves, which plentifully imbibe the Dew which contain Salt, Sulphur, &c.

For the Air is full of acid and sulphureous Particles, which, when they abound much, do, by the Action and Reaction between them and the elastick Air, cause that sultry Heat which usually ends in Lightning and Thunder; and these new Combinations of Air, Sulphur, and acid Spirit, which are constantly forming in the Air, are doubtless, very serviceable in promoting the Work of Vegetation; when, being imbibed by the Leaves, they may not improbably be the Materials out of which the more subtle and refined Principles of Vegetables are formed; for so fine a Fluid as the Air seems to be a more proper Medium, wherein to prepare and combine the more exalted Principles of Vegetables, than the grosser watery Fluid of the Sap: And for the same Reason it is likely, that the most refined and active Principles of Animals are also prepared in the Air, and thence conveyed through the Lungs into the Blood; and that there is Plenty of these sulphureous-aereal Particles in the Leaves, is evident from the sulphureous Exudations that are found in the Edges of Leaves, of which Bees are observed to make their waxen Cells, as well as of the Dust of Flowers. And that Wax abounds with Sulphur, is plain from its burning freely, &c.

We may therefore reasonably conclude, that one great Use of Leaves is what has been long suspected by many, viz. to perform, in some Measure, the same Office for the Support of the vegetable Life, as the Lungs of Animals do for the Support of animal Life; Plants, very probably, drawing through their Leaves some Part of their Nourishment from the Air.

LEDUM. *Raii Syn.* 1.—142. *Lin. Gen. Pl.* 483. Marsh Cistus, or wild Rosemary.

The Characters are,

The Flower has a small Empalement of 1 Leaf, indented in 5 Parts. It hath 5 oval, concave, spreading Petals, and 10 slender Stamina the Length of the Petals, which spread open, terminated by oblong Summits, and a roundish Germen supporting a slender Style, crowned by an obtuse Stigma. The Germen becomes a roundish Capsule with 5 Cells, opening at the Base in 5 Parts, and filled with small, narrow, acute pointed Seeds.

We have but one Species of this Genus, viz.

LEDUM *foliis linearibus subtus hirsutis, floribus corymbosis. Flor. Suec.* 341. *Ledum* with very narrow Leaves, hairy on their under Side, and Flowers growing in a Corymbus. *Rosmarinum sylvestre minus nostras. Park. Hist.* 76. Our small wild Rosemary.

This Plant grows naturally upon Mosses and Bogs in many Parts of *Yorkshire, Cheshire, and Lancashire*, where it rises with a slender shrubby Stalk about 2 Feet high, dividing into many slender Branches, garnished with narrow Leaves not much unlike those of Heath. The Flowers are produced in small Clusters at the End of the Branches, which are shaped like those of the Strawberry Tree, but spread open wider at the Top. These are of a reddish Colour and appear in *May*, and in the natural Places of their Growth, are succeeded by Seed Vessels filled with small Seeds, which ripen in Autumn.

It is with great Difficulty this Plant is kept in a Garden, for as it naturally grows on Bogs, unless the Plants have some such Soil and a shady Situation, they will not thrive. The Plants must be procured from the Places of their Growth, and taken up with good Roots, otherwise they will not live. They cannot be propagated in Gardens, but in the Mosses their Roots spread and propagate pretty freely.

LEEKs. See Porrum.

LEGUMES, or LEGUMENS, are a Species of Plants which are called Pulse, such as Peas, Beans, &c. and are so called, because they may be gathered by the Hand without cutting. Mr. Ray reckons all those Plants which have a papilionaceous Flower, among the Legumes; but the French comprehend most Sorts of esculent Plants, under this Title of Legumes.

LEGUMINOUS, of or belonging to Pulse.

LEMON TREE. See Limon.

LENS. See Ervum.

LENS PALUSTRIS, Duck Meat. This is a very common Plant, growing on standing Waters in moist Parts of *England*; where, if it is not disturbed, it will soon cover the whole Surface.

LENTISCUS. See Pistacia.

LEONTICE. *Lin. Gen. Pl.* 381. *Leontopetalon. Tourn. Cor.* 49. *Tab.* 484. Lion's Leaf.

The Characters are,

The Empalement of the Flower is made up of 6 very narrow Leaves, which are alternately smaller and drop off. The Flower has 6 oval acute Petals, twice the Length of the Empalement, and 6 Nectaria fixed by small Foot Stalks to the Base of the Petals. It has 6 short slender Stamina, terminated by erect Summits. In the Center is placed an oblong oval Germen, supporting a short taper Style, inserted

inserted obliquely to the Germen, crowned by a simple Stigma. The Germen becomes a globular swollen Berry a little succulent, with 1 Cell, inclosing 2 or 3 globular Seeds.

The Species are,

1. *LEONTICE foliis pinnatis, petiolo communi simplici.* Hort. Cliff. 122. Lion's Leaf, with winged Leaves having 1 common single Foot Stalk. *Leontopetalon foliis costae simplici innascentibus.* Tourn. Cor. 49. Lion's Leaf with a single Foot Stalk to the Leaves.

2. *LEONTICE foliis decompositis, petiolo communi trifido.* Hort. Cliff. 122. Lion's Leaf with decomposed Leaves, and a common trifid Foot Stalk. *Leontopetalon foliis costae ramosae innascentibus.* Tourn. Cor. 49. Lion's Leaf, with a branching Foot Stalk to the Leaves.

These Plants both grow naturally in the Islands of the Archipelago, and also in the Corn Fields about Aleppo, where they flower soon after Christmas. They have large tuberous Roots, about the Size of those of Cyclamen, covered with a dark brown Bark; the Leaves arise upon slender Foot Stalks immediately from their Roots, which grow about 6 Inches high; that of the first Sort is single, having many small Folioli ranged along the Mid-rib, but the Foot Stalks of the second Sort are branched into 3 smaller; upon each of these are ranged several Folioli or small Leaves, in the same Form as the winged Leaves. The Flowers sit upon naked Foot Stalks, those of the first Sort sustain many yellow Flowers, but the Flowers of the second are smaller and of a paler Colour. These in their native Country appear soon after Christmas, but in England they do not flower till the Beginning of April, and are never succeeded by Seeds here.

Both these Plants are propagated by Seeds, which require to be sown soon after they are ripe, otherwise they seldom succeed; but as they are brought from distant Countries, they should be preserved in Sand to be sent to England, I received a few of these Seeds from the Duke D' Aven, which were sent him from Aleppo put up in Sand, and these came up better than any of those which came over dry; for of several Parcels of these Seeds which I have sown of both Kinds the 3 last Years, I have not had more than 2 Plants arise.

The Plants are very difficult to preserve in England, for the Roots will not thrive in Pots; and when they are planted in the full Ground, the Frost frequently destroys them in Winter, especially while the Roots are young. Of late Years the Winters have proved so very unfavourable, as to kill all the young Roots which I had raised in the Chelsea Garden; but before the severe Winter in 1740, I had some of the Roots which were planted in a South-west Border, that flowered several Years, and without any Shelter survived the Winters; but although I covered many of those Roots which I had lately raised, yet I could not preserve them.

The Leaves of these Plants decay about Midsummer, and the Roots remain in an unactive State till the following Spring, at which Time the Flowers and Leaves come up nearly at the same Time.

When the Seeds are procured from Abroad, the best Way is to sow them as soon as they arrive, and cover

them with Glasses in the Winter to protect them from Frost; and in the Spring, when the Plants begin to appear, they must have the free Air admitted to them at all Times when the Weather is mild, otherwise they are very subject to draw up tall with weak Stems, and their Roots do not increase in their Bulk. If the Plants are not too close, it will be best to let them remain in the Place unremoved till the second Year; but where they are too close, Part of the Roots may be taken up in October, and transplanted close to a warm Wall, being very careful not to disturb the Roots which are left standing; and in November, before the hard Frost sets in, it will be a good Way to lay some old Tanners Bark over the Surface of the Ground, 3 or 4 Inches thick, to prevent the Frost from penetrating to the Roots; but this should be most of it taken off in March before the Roots begin to push out their Leaves; and if this is removed in Part soon after the hard Frost is over in February, and another Part three Weeks or a Month after, it will be better than taking it all off at the same Time; and if a thin Covering of the Tan is left at the last over the Surface of the Ground, it will prevent the drying Winds of the Spring from drying the Ground, which will be of great Service to the Roots. These Roots should have a dry loose Soil, and must be seldom removed, but when that is done, October is the best Time, for then the Roots are inactive.

LEONTODON. Lin. Gen. Pl. 817. *Dens leonis.* Tourn. Inst. R. H. 468. Dandelion; in French, *Dent de Lion.*

There are four or five Species of this Genus, which grow naturally in the Fields, so are not cultivated in Gardens; but some People in the Spring gather the Roots out of the Fields, and blanch them in their Gardens for a Salad Herb; however, as they are not cultivated, I shall forbear saying any Thing more of them, than that they are very bad Weeds both in Gardens and Fields, so should be rooted out before their Seeds are ripe, otherwise they will spread to a great Distance, as they have Down adhering to them, by which they are watted about by the Wind.

LEONTOPODIUM. See Plantago.

LEONURUS. Tourn. Inst. R. H. 187. Tab. 87. *Phlomis.* Lin. Gen. Pl. 642. Lion's Tail.

The Characters are,

The Flower has a tubulous, 5 cornered, permanent Em-palement of 1 Leaf; the Flowers have one Petal, and are of the Lip Kind; the upper Lip is long, cylindrical, hairy, and entire; the lower Lip is short, reflexed, and cut into 3 Parts. It hath 4 Stamina situated under the lower Lip, 2 of which are shorter than the other; these are terminated by oblong compressed Summits. In the Bottom of the Tube are situated 4 Germina supporting a slender Style, situated with the Stamina, and crowned by a bifid acute Stigma. The Germina become 4 oblong angular Seeds, sitting in the Em-palements.

The Species are,

1. *LEONURUS foliis lanceolatis, obtuse serratis.* Hort. Cliff. 312. Lion's Tail with Spear-shaped Leaves, which are bluntly sawed. *Leonurus perennis Africanus, sideritis folio, flore Phanicio majore.* Breyn. Cent. 1. 171. Perennial

rennial African Lion's Tail with an Ironwort Leaf, and a larger scarlet Flower.

2. *LEONURUS foliis ovatis, calycibus decagonis, septem dentatis, inaequalibus.* Hort. Cliff. 312. Lion's Tail with oval Leaves, an Empalement having 10 Corners and 7 unequal Indentures. *Leonurus minor, Capitis Bonae Spei, vulgo.* Boerb. Ind. alt. 180. Small Lion's Tail of the Cape of Good Hope.

The 1st Sort is a Native of Ethiopia, but has been long cultivated in the English Gardens. This rises with a shrubby Stalk, 7 or 8 Feet high, sending out several Branches from the Side, which are four cornered; these are garnished with oblong narrow Leaves, acutely indented on their Edges; they are about 3 Inches long, and half an Inch broad, hairy on their upper Side, and veined on their under, standing by Pairs opposite. The Flowers are produced in Whorls round the Branches, each of the Branches having 2 or 3 of these Whorls toward their Ends, sitting very close to the Branches; they are of the Lip Kind, shaped somewhat like those of the dead Nettle, but much longer and covered over with short Hairs; they are of a golden scarlet Colour, so make a fine Appearance. The Flowers commonly appear in October and November, and sometimes continue till the Middle of December, but are not succeeded by Seeds here.

There is a Variety of this Sort with variegated Leaves, which is by some admired; but as this seldom produces so large Whorls of Flowers as the plain Sort, it is not generally esteemed.

The 2d Sort is mentioned by several Authors as an annual Plant; they also suppose it to be a Native of America, and believe it was brought from Surinam to Holland; but it is undoubtedly a Native of the Cape of Good Hope, from whence I have two or three Times received the Seeds; and the late Dr. Boerhaave assured me, that he had frequently received the Seeds from that Country, as also a Painting of the Plant, so that he made no Doubt of the Plant growing naturally there.

This rises with a square shrubby Stalk about 3 Feet high, sending out several four cornered Branches, garnished with oval crenated Leaves, rough on their upper Side like the dead Nettle, but veined on the under, which is of a pale green; these are placed opposite by Pairs, as are also their Branches. The Flowers come out in Whorls round the Branches, in like Manner as the former, but are not so long nor so deep coloured; they appear at the same Season with the first, and continue as long in Beauty.

Both these Sorts are propagated by Cuttings in Europe, for they do not produce any Seeds here. If the Cuttings are planted in July, after the Plants have been so long exposed to the open Air as to harden the Shoots, they will take Root very freely. They should be planted in a loamy Border to an East Aspect, and if they are covered closely with a Bell or Hand Glass to exclude the Air, and shaded from the Sun, it will forward their putting out Roots; but when they begin to shoot, the Glasses should be raised to admit the free Air, to prevent their drawing up weak, and by Degrees they must be exposed to the open Air. As soon as they have taken good Root, they must be taken up, and each planted

in a separate Pot filled with soft loamy Earth, and placed in the Shade till they have taken new Root; then they may be removed to a sheltered Situation, where they may remain till October, when they must be removed into the Green-house, and afterward treated as the Myrtle, and other hardy Green-house Plants, observing to water the first Sort plentifully.

LEPIDIUM. Tourn. Inst. R. H. 215. Tab. 103. Lin. Gen. Pl. 718. Dittander, or Pepperwort.

The Characters are,

The Empalement of the Flower is composed of 4 oval concave Leaves, which fall off. The Flower has 4 oval Petals placed in the Form of a Cross, which are much larger than the Empalement, and 6 Awl-shaped Stamina the Length of the Empalement, 2 of which are shorter than the other, terminated by single Summits. In the Center is situated a Heart-shaped Germen, supporting a single Style, crowned by an obtuse Stigma. The Germen turns to a Spear-shaped Seed Vessel with 2 Cells, divided by an intermediate Partition, containing oblong Seeds.

The Species are,

1. *LEPIDIUM foliis ovato-lanceolatis integris serratis.* Hort. Cliff. 330. Dittander with entire, oval, Spear-shaped Leaves, which are sawed. *Lepidium latifolium.* C. B. P. 97. Broad leaved Dittander.

2. *LEPIDIUM foliis lanceolatis amplexicaulis dentatis.* Hort. Cliff. 331. Dittander with Spear-shaped indented Leaves, which embrace the Stalks. *Lepidium bumile, incanum, arvense.* Tourn. Inst. R. H. 216. Low hoary Dittander of the Fields.

3. *LEPIDIUM foliis lineari-lanceolatis subdentatis amplexicaulis radice reptatrice.* Dittander with narrow Spear-shaped Leaves a little indented, which embrace the Stalk, and a creeping Root. *Lepidium bumile minus incanum, Alepicum.* Tourn. Inst. 216. Low Dittander of Aleppo with less hoary Leaves.

4. *LEPIDIUM floribus diandris tetrapetalis, foliis inferioribus lanceolatis serratis, superioribus linearibus integerrimis.* Flor. Leyd. Prod. 334. Dittander with Flowers having 4 Petals and 2 Stamina, whose under Leaves are Spear-shaped and sawed, and the under one narrow and entire. *Lepidium gramineo folio free Iberis.* Tourn. Inst. 216. Dittander with a Grass Leaf, or Iberis.

5. *LEPIDIUM foliis caulinis pinnato-multifidis, ramiferis cordatis, amplexicaulis integris.* Hort. Cliff. 331. Dittander with the lower Leaves Wing-pointed, and those on the Branches Heart-shaped, entire, and embracing the Stalks. *Thlaspi verum Dioscoridis.* 1. Zan. Hist. 193. The true Mithridate Mustard of Dioscorides.

6. *LEPIDIUM floribus subtriandris tetrapetalis, foliis linearibus pinnatis.* Lin. Gen. Pl. 645. Dittander with Flowers having 4 Petals, and chiefly with 3 Stamina; and very narrow winged Leaves. *Iberis bumilior annua Virginiana, ramifera.* Mor. Hist. 2. p. 311. Lower annual branching Sciatica Cress of Virginia.

7. *LEPIDIUM foliis lyratis crispis.* Lin. Sp. Pl. 644. Dittander with curled Lyre-shaped Leaves. *Lepidium Orientale nasturtii crispis folio.* Tourn. Cor. 15. Eastern Dittander, with a Leaf like curled Cress.

The

The 1st Sort grows naturally in moist Places in many Parts of *England*, so is seldom cultivated in Gardens. It hath small white creeping Roots, by which it multiplies very fast, so as to render it difficult to eradicate the Plant, after it has grown long in any Place; the lower Leaves are oval, Spear-shaped, about 3 Inches long, and one and a Half broad toward the Base, sawed on the Edges, and standing on long Foot Stalks. The Stalks rise 2 Feet high, they are smooth, and send out many Side Branches; the Leaves on the Stalks are longer, narrower, and more acute pointed than the lower, and are not sawed on their Edges. The Flowers grow in close Bunches toward the Top of the Branches, coming out from the Side; they are small, and are composed of 4 small white Petals. These appear in *June* and *July*, and the Seeds ripen in the Autumn. The whole Plant has a hot biting Taste like Pepper, and the Leaves have been often used by the Country People to give a Relish to their Viands instead of Pepper; from whence it had the Appellation, of poor Man's Pepper.

This Plant is easily propagated, for every Piece of the Root will grow and multiply where-ever it is planted, so will become troublesome to root out after growing for some Time in a Garden. The Leaves of this Plant bruised and mixed with Hog's Lard, and applied as a Cataplasm to the Hip, help the Sciatica; and chewed in the Mouth, cause a great Defluxion of Rheum, so is said to help scrophulous Tumours in the Throat.

The 2d Sort grows naturally in *Austria* and *Italy*; this hath a fleshy fibrous Root, from which arise several weak Stalks about a Foot and a Half high, garnished with Spear-shaped Leaves, 3 Inches long and one and a Half broad, deeply cut in upon the Edges; these are smooth, a little hoary, and embrace the Stalks with their Base; the Flowers are small, white, and grow in loose Bunches at the End of the Branches. They flower from *June* till the Beginning of *September*, and the Seeds ripen in Autumn.

This is a perennial Plant, which propagates very fast by its Roots, and is seldom admitted into Gardens.

The 3d Sort grows naturally about *Aleppo*; this hath creeping Roots, which extend to a great Distance on every Side, so will soon spread over a large Piece of Ground. The Leaves of this are longer and narrower than those of the former, and are less hoary; the Flowers grow in loose Bunches at the End of the Branches, they are small and white like those of the first. This is a hardy perennial Plant, which propagates by its creeping Roots in as great Plenty as either of the former.

The 4th Sort grows naturally in the South of *France*, *Italy*, and *Sicily*, but is preserved in some *English* Gardens for Variety. This hath a long fleshy Root, which runs deep into the Ground, and sends out many oblong Leaves which are sawed on their Edges, and spread flat on the Ground; the Stalks are slender, stiff, and branch out horizontally on every Side; they rise about 2 Feet high, and are garnished with very narrow entire Leaves. The Flowers come out in close small Clusters at the End of the Branches, they are very small and white, and appear in *June* and *July*, and the Seeds ripen in Autumn.

If these Seeds are permitted to scatter, the Plants will come up early in the Spring, and require no other Care but to keep them clean from Weeds; the Roots will abide several Years, if they are in a dry Soil. This Plant is also commended for its Virtues in Sciaticas, if bruised and mixed with Hog's Lard as the first, and from its Virtues it obtained the Title of Sciatica Cress.

The 5th Sort grows naturally in *Spain*; this hath a low slender Stalk, which is a little ligneous, sending out several slender Branches, which rise about a Foot high, garnished with very narrow Awl-shaped Leaves, growing sparsely along the Branches; they are of a grayish Colour, and a little hairy. The Flowers are produced in loose Bunches from the Side and at the Top of the Stalk, they are small and white, appearing in *June* and *July*, and the Seeds ripen in Autumn; but the Plants will abide several Years, if they are in a dry Soil, and resist the Cold of our ordinary Winters very well.

If the Seeds of this Sort are sown in Spring, on a Border of light Earth, the Plants will come up in 5 or 6 Weeks; when they must be kept clean from Weeds; and where they are too close, they should be thinned, leaving them about 6 Inches apart, after which they will require no other Care. A few of these Plants by Way of Variety may have Place, but having little Beauty, few People care to admit them into Gardens.

The 6th Sort grows naturally in *Persia* and *Syria*; this is supposed to be the true Mithridate Mustard of *Dioscorides*. It is an annual Plant, whose lower Leaves are winged, and finely cut into many Segments; the Stalks rise a Foot high, dividing into many slender Branches, garnished with Heart-shaped Leaves that are entire, and embrace the Stalks with their Base. The Flowers grow in long loose Spikes from the End of the Branches, they are small and yellow, and appear in *June* and *July*, and the Seeds ripen in *September*, soon after which the Plant decays.

The Seeds of this Plant should be sown in the Autumn, for those which are sown in the Spring, seldom flower the same Year, and are often killed by the Frost in Winter; whereas those sown in the Autumn, or the Plants that rise from scattered Seeds, will always flower about *Midsummer*, and their Seeds ripen the *September* following. The Plants require no other Care but to thin them, and keep them clean from Weeds.

The 7th Sort is an annual Plant, which grows naturally in *Virginia*, and also in all the Islands of the *West-Indies*, where the Inhabitants gather the Leaves, and eat them in their Sallads as we do the Garden Cress.

The lower Leaves of this Sort are 3 Inches long and 1 broad, sawed on their Edges, and of a light green, with a biting Taste like Cress. The Stalk rises a Foot and a Half high, sending out a great Number of small Side Branches, garnished with narrow Leaves regularly sawed on their Edges, so as to resemble winged Leaves; these sit close to the Branches. The Flowers are produced at the End of the Branches in loose Spikes, they are small and white, and are succeeded by roundish or Heart-

Heart-shaped compressed Seed Vessels, which have a Border round them. It flowers in June and July, and the Seeds ripen in Autumn; this Sort is easily propagated by Seeds, which may be sown on an open Bed in April, where the Plants are designed to remain, and when they come up, they will require no other Care, but to thin them where they are too close, and keep them constantly clean from Weeds; or if the Seeds are permitted to scatter in Autumn, the Plants will come up very well, and may be treated as the other.

The 8th Sort grows naturally in *Asia*, and also in *Spain*, from whence I have received the Seeds. This is a biennial Plant, the lower Leaves which spread on the Ground, are near 2 Inches long, and about half an Inch broad, indented on both Sides in Shape of a Lyre, and curled on the Edges; the Stalks rise a Foot high, and divide into a great Number of slender Branches, garnished with small oblong Leaves, cut on their Sides, and a little curled on their Edges; the Stalks and Leaves are of a gray Colour, inclining toward Hoariness. The Flowers are produced in Clusters at the End of the Branches; they are very small and white, appearing in July, and are succeeded by roundish bordered Seed Vessels which are compressed, and have 2 Cells each, containing 2 small oblong Seeds, which are ripe in the Autumn.

This Sort may be propagated by Seeds, as the former; or if the Seeds are permitted to scatter in Autumn, the Plants will come up without Care, and should be treated as the former Sort; but this does not flower till the second Year, so the Plants should be left farther asunder.

All these Sorts are preserved in Botanick Gardens for Variety, but are rarely to be seen in other Gardens, because they have no great Beauty, nor are they of much Use at present.

LEPIDOCARPODENDRON. See Protea.

LETTUCE. See Lactuca.

LEUCANTHEMUM. See Anthemis.

LEUCOJUM. *Lin. Gen. Pl. 363. Narcisso-leucojum. Tourn. Inst. R. H. 387. Tab. 208. Snow-drop; in French, Perce-neige.*

The Characters are, *It hath an oblong, obtuse, compressed Spatha or Sheath, which opens on the Side. The Flower is of the spreading Bell Shape, cut into 6 Parts, which join at their Base. It hath 6 short bristly Stamina, terminated by oblong, obtuse, four cornered Summits, which are erect. The roundish Germen is situated under the Flower, supporting a Style which is thick and obtuse at the Top, crowned by an erect bristly Stigma. The Germen becomes a turbinated Capsule with 3 Cells, opening with 3 Valves, and filled with roundish Seeds.*

The Species are,

1. *LEUCOJUM spathâ uniflorâ, stylo clavato. Lin. Sp. Pl. 289. Snow-drop with a Sheath inclosing one Flower, with a Key-shaped Style. Narcisso-leucojum. vulgare. Tourn. Inst. R. H. 387. Common great Snowdrop.*

2. *LEUCOJUM spathâ multiflorâ, stylo filiformi. Læf. Lin. Sp. Pl. 289. Snowdrop with many Flowers in a Sheath, and a Thread-like Style. Narcisso-leucojum pratense multiflorum. Tourn. Inst. R. H. 387. Meadow Snowdrop with many Flowers, commonly called the all late Snowdrop.*

The 1st Sort grows naturally in *Switzerland* and *Germany*, as also on the Mountains near *Turin*. This hath an oblong bulbous Root, shaped like that of the Daffodil, but smaller; the Leaves are flat, of a deep green, four or five in Number, broader than those of the small Snowdrop; between these arise an angular Stalk near a Foot high, which is naked, hollow, and channelled; toward the Top comes out a Sheath which is whitish, opening on the Side, out of which come one, or sometimes two white Flowers, hanging on slender Foot Stalks; these have but 1 Petal, cut into 6 Parts almost to the Bottom. These are much larger than those of the small Snowdrop, and the Ends of the Segments of the Petal are tipped with green, where they are of a thicker Substance than in any other Part. These Flowers appear in *March*, soon after those of the small Sort; they have an agreeable Scent, not much unlike that of the Flowers of Hawthorn; after the Flower is past, the Germen which is situated below the Flower, swells to a Pear-shaped Capsule with 3 Cells, inclosing several oblong Seeds.

The Leaves of this Sort decay toward the End of *May*, after which Time the Roots may be taken up and transplanted, for they should not be long kept out of the Ground. It is propagated here by Offsets, which the Roots put out pretty plentifully when they are in a Situation agreeable for them, and when they are not too often removed. They should have a soft, gentle, loamy Soil, and an Exposure to the East; the Roots should be planted 6 Inches asunder, and 4 or 5 Inches deep, and must not be transplanted oftener than every third Year.

The 2d Sort is generally known by the Title of late, or tall Snowdrop; this grows naturally in the Meadows near *Pisa* in *Italy*, in *Hungary*, and also near *Montpelier*.

The Root of this Sort is near as large as that of the common Daffodil, and is very like it in Shape; the Leaves are also not unlike those of the Daffodil, and are more in Number than those of the other Sort; they are green, and Keel-shaped at the Bottom, where they fold over each other and embrace the Stalk, which rises a Foot and a Half high, and at the Top is situated a Spatha (or Sheath) which opens on one Side, and lets out 3 or 4 Flowers, which hang downward, on pretty long Foot Stalks; these are cut into 6 oval concave Segments almost to the Bottom, and are of a clear white, with a large green Tip to each Segment, which is of a thicker Consistence than any other Part of the Petal; within are situated 6 Awl-shaped Stamina, with oblong yellow Summits, standing erect round a very slender Style, crowned by an obtuse Stigma. These Flowers appear the latter End of *April* or Beginning of *May*, and as all the Flowers in each Sheath do not come out together, but following each other, there is a Succession of them for 3 Weeks or longer, in cool Weather. The Flowers are succeeded by large triangular Seed Vessels, having 3 Cells, each containing 2 Rows of Seeds.

This Sort is generally propagated in *England* by Offsets, for the Plants raised by Seeds will not come to flower in less than 4 Years; and as the Roots put out Offsets in Plenty, it is the more expeditious Method. These Roots may be treated as the first Sort, and should have a soft loamy Soil, and be exposed only to the Morning

ing Sun, where they will flower stronger and continue longer in Beauty, than when they are in an open Situation, though they will thrive in almost any Soil or Situation.

LEUCOJUM INCANUM. } See Cheiranthus.
LEUCOJUM LUTEUM }
LEUCOJUM BULBOSUM. See Galanthus.

LEVEL, a mathematical Instrument serving to draw a Line parallel to the Horizon, not only for various Uses in Masonry, &c. but also to measure the Difference of Ascent and Descent between several Places, for the conveying of Water, draining of Fens, &c.

A Water Level shews the horizontal Line, by Means of a Surface of Water, or other Liquid, founded on this Principle, That Water always naturally places itself level.

The most simple Instrument for this Use is made of a long wooden Trough, or Canal, whose Sides are parallel to its Base, so that, being equally filled with Water, the Surface thereof shews the Line of Level.

This Level is also made with two Cups fixed to the two Ends of a Pipe 3 or 4 Feet long, about an Inch in Diameter, by Means whereof, the Water communicates from the one to the other Cup, and this Pipe being moveable on its Stand, by Means of a Ball and Socket, when the 2 Cups become equally full of Water, the two Surfaces mark the Line of Level.

Instead of Cups, this Instrument may be made with two short Cylinders of Glass 3 or 4 Inches long, fastened to each End of the Pipe with Wax or Mastich, then the Pipe, being filled either with common, or coloured Water, will shew itself through the Cylinder, by Means of which the Line of Level is determined, the Height of the Water, with Respect to the Center of the Earth, being always the same in both Cylinders. This Level is very commodious in levelling small Distances.

If you would level any Piece of Ground that you can see from Side to Side, or from the Middle to any Side, set up your Instrument in the Middle of it, whether it be a Water Level, or a Ground Level with Sights; place it so high, that you may see over the highest Part of the Ground half a Foot, or a Foot; then set up a Stake in the Middle, so that the Top may be exactly level with the Sights, and another Stake on the highest Side, the Top of which must be level with the middle Stake; then either turn the Level, or Look-back Sight, and set up another Stake on the lower Ground level with the two first, then you will have three Stakes standing in a Level.

Then keeping your Level true to the middle Stake, turn it till it makes right Angles with the three Stakes, and set up two Stakes on each Side one Level with those three, then you will have five Stakes in two Lines set true Level.

If the Ground be large, you may set up two Rows more by the Level, but five Stakes are enough in a small Ground.

When this is done, you may lay your Level aside, and look over the Head of one to the Head of another, and cause the Person who assists you to put down Stakes between two and two, till you have set as many Stakes level in the Ground as you think convenient, or you may use a Rule, which being placed level with the

Head of the Stake, you may look over that to the Head of the other, and put Stakes down between you and the other Stake, to what Number you please.

The Ground being thus staked out with all the Stakes Heads level, and half a Foot higher than the highest Ground, in some Grounds the middle Stake, and the Stakes in the Cross Line, will be the Level Line the Ground must be brought to, that is, abating the Hill, and filling up the low Side to the Level of the Mid-line. But if the Ground be very uneven, then you must measure over all the Stakes, and take them Middle high for their mean Level, and, by the Rule of Three, proportion your Ground to that.

As for Instance: If a Valley be ten Poles in Length, and two Feet in Depth from the strait Line, and there be a Hill five Poles long; How many Feet deep must a Person sink those five Poles to fill up the Valley? This Question may be resolved by the Inverse or Back Rule of Three, and will stand thus: As 5 to 2, so is 10 to 4.

$$\begin{array}{r} 5 \text{ --- } 2 \text{ --- } 10 \\ \quad \quad \quad 2 \\ \hline 5 \overline{) 20} 4 \end{array}$$

So that a Person must go four Feet deep in such a Hill to make good such a Valley.

If you are to abut the Top of the Hill four Feet deep, and two Poles from the Top of that Hill, those four Feet are to come out.

To perform this, set up a Stake on the Top of a Hill two or three Feet above Ground, and another of the same Height where the Depth comes out, set down a Stake three Rods from that, till the Head comes to be in a Line with these two, and at that Stake you must be one Foot deep.

At six Poles stake down another as before, and there you must be two Feet deep; then stake down another at nine Poles, and there you must be three Feet deep, and you may set more Stakes at equal Distances, which will direct you so as that you cannot go amiss.

LICHEN. Liverwort.

There being two Sorts of this Plant, used in Medicine, and one of those being accounted a sovereign Remedy for the Bite of mad Dogs, I thought it would not be improper to mention them here, though they are Plants which cannot be propagated by any Method, except by paring up the Turf of Grass whereon they grow, and laying it down in some moist shady Place, where, if the Turf takes Root, and thrives, these Plants will spread, and do well. The two Sorts are,

1. LICHEN *petraeus latifolius*, frœe *Hepatica fontana*. C. B. P. Common broad leaved Liverwort.
2. LICHEN *terrestris cinereus*. Raii Syn. Ash-coloured Ground Liverwort.

The 1st Sort grows on the Sides of Wells, and in moist shady Places, not only on the Ground, but on Stones, Bricks, or Wood. Of this there are several Varieties, which are distinguished by the Curious in Botany; but as they are Plants of no Use, I shall not enumerate them.

The 2d Sort (which is used to cure the Bite of mad Dogs) grows on Commons, and open Heaths, where the Grass is short, in most Parts of England, especially on

Declivities, and on the Sides of Pits. This spreads on the Surface of the Ground, and, when in Perfection, is of an Ash Colour, but as it grows old, it alters, and becomes of a dark Colour. This is often carried into Gardens with the Turf which is laid for Walks and Slopes, and where the Soil is moist and cool, it will spread, and be difficult to destroy, so that it renders the Grass unsightly; but this is the only Method yet known to have it grow in Gardens, where it is desired.

This is esteemed a sovereign Remedy for the Bite of mad Dogs, and hath been for many Years used with great Success. It was communicated to the Royal Society by Mr. George Dampier, whose Uncle had long used this Plant, to cure the Bite of mad Dogs on Men and Animals, with infallible Success. The Method of taking it he has delivered as followeth: "Take of the Herb, and dry it either in an Oven, by the Fire, or in the Sun; then powder it, and pass it through a fine Sieve; mix this with an equal Quantity of fine powdered Pepper. The common Dose of this Mixture is four Scruples, which may be taken in warm Milk, Beer, Ale, or Broth." He also advises, that the Part bitten be well washed, as also the Clothes of the Person who is bit, lest any of the Snivel, or Drivel, of the mad Dog should remain. If the Person bitten be full grown, he advises, that he be blooded before the Medicine is taken, and to use the Remedy as soon after the Bite as possible, as also to repeat the Dose two or three several Mornings fasting.

LIGUSTICUM. *Tourn. Inst. R. H. 323. Tab. 171. Lin. Gen. Pl. 308.* [takes its Name of *Liguria*, because this Plant, in old Time, grew in greatest Plenty near a River of *Genoa*, called *Liguria*.] Lovage; in *French*, *Livèche*.

The Characters are,

It hath an umbellated Flower. The general Umbel is composed of several smaller, which are also composed of other very small Umbels. The general Umbel has an Involucrum composed of 7 unequal Leaves. The Perianthium of the Flower is indented in 5 Parts, sitting upon the Germen. The Flower hath 5 equal Petals, inflexed at their Points, and Keel-shaped within. It hath 5 hairy Stamina, shorter than the Petals, terminated by simple Summits. The Germen, which is situated under the Flower, supports 2 simple Styles, crowned by simple Stigmas. The Germen turns to an oblong Fruit, divided into 2 Parts, which is angular, and channelled, containing 2 oblong smooth Seeds.

The Species are,

1. **LIGUSTICUM** foliis multiplicibus, foliolis supernè incis. *Hort. Cliff. 97.* Lovage with many Leaves, whose Lobes are cut toward the Top. *Levisticum vulgare. Mor. Hist. 3. p. 275.* Common Lovage.

2. **LIGUSTICUM** foliis biternatis. *Lin. Sp. Pl. 250.* Lovage with double trifoliate Leaves. *Ligusticum Scoticum Apii folio. Tourn. Inst. R. H. 324.* Scotch Lovage with a Smallage Leaf.

3. **LIGUSTICUM** foliis bipinnatis, foliolis confluentibus incis. integerrimis. Lovage with double winged Leaves, whose Lobes run together, and have entire Segments. *Ligusticum cicutæ folio glabrum. Tourn. Inst. R. H. 323.* Lovage with a smooth Hemlock Leaf.

4. **LIGUSTICUM** foliis pinnatifidis, foliolis linearibus

planis. Lovage with Wing-pointed Leaves, whose Lobes are very narrow and plain. *Ligusticum Pyrenaicum, fœniculi folio lucidum. Tourn. Inst. 324.* Lovage of the Pyrenees with a shining Fennel Leaf.

5. **LIGUSTICUM** foliis multiplicato-pinnatis, foliolis pinnatim incis. Lovage with Leaves many Times winged, and Lobes cut like Wings. *Cicutaria latifolia fœtida. C. B. P. 161.* Broad leaved stinking Bastard Hemlock.

The 1st Sort is the common Lovage of the Shops; this was formerly cultivated in the Kitchen Gardens as an esculent Herb, but has been long disused as such in England. It grows naturally on the *Apennines*, and also near the River *Liguria*, not far from *Genoa*; this hath a strong fleshy perennial Root, which strikes deep into the Ground, and is composed of many strong fleshy Fibres covered with a brown Skin, and has a strong hot aromack Smell and Taste. The Leaves are large, winged, and composed of many large Lobes shaped like those of Smallage, but larger and of a deeper green. The Lobes toward the Top are cut into acute Segments. The Stalks rise to the Height of 6 or 7 Feet; they are large and channelled, dividing into several Branches, each being terminated by a large Umbel of yellow Flowers, which are succeeded by oblong striated Seeds. It flowers in *June* and *July*, and the Seeds ripen in Autumn.

This is easily propagated by Seeds, which should be sown in Autumn, soon after they are ripe, for when they are kept out of the Ground till Spring, they seldom grow the first Year; when the Plants come up, they may be transplanted into a moist rich Border, at about 3 Feet Distance from each other, and after they have taken new Root, they will require no other Care but to keep them clean from Weeds. The Roots will abide many Years, and where the Seeds are permitted to scatter, the Plants will come up without Care.

The Roots, Leaves, and Seeds of Lovage, are heating and drying, they warm and comfort the Stomach, expel Wind, and provoke Urine.

The 2d Sort grows naturally near the Sea in many Parts of *Scotland*; this hath a perennial Root, but of much less size than the former, the Leaves are composed of broader and shorter Lobes, each Leaf having 2 or 3 trifoliate Leaves, whose Lobes are indented on their Edges. The Stalk rises about a Foot high, sustaining a small Umbel of yellow Flowers on the Top, shaped like those of the former; these appear in *June*, and are succeeded by oblong channelled Seeds, which ripen in Autumn. This Plant may be cultivated as the former.

The 3d Sort grows naturally on the *Alps*; this is a perennial Plant. The Stalks rise about 2 Feet high, and at every Joint are bent alternately, first to one Side, then to the opposite; at each Joint they are garnished with doubly winged Leaves, composed of small Lobes which run into each other, and just above each Leaf comes out a Side Branch; these, as also the principal Stalks are terminated by Umbels of white Flowers, which appear in *June*, and are succeeded by oblong channelled Seeds, which ripen in Autumn.

The 4th Sort grows naturally on the *Pyrenean Mountains*; this hath a perennial Root. The Leaves are doubly

doubly winged. The Lobes are very narrow, and finely divided. The Stalks are strong, and rise a Foot and a Half high, garnished with shining winged Leaves, and terminated by pretty large Umbels of yellowish Flowers, which appear in *June*, and the Seeds ripen in *September*.

The 5th Sort grows naturally on the *Peloponnesian* Mountains; this hath a very thick fleshy Root, like that of Parsnep, which strikes deep in the Ground. The Leaves are very large, being composed of many winged Leaves, whose Lobes are cut into acute Points; these are of a deep green, and, when bruised, emit a foetid Odour. The Stalks rise 4 or 5 Feet high; they are very large and hollow, like those of Hemlock, and sustain at their Top, large Umbels of yellowish Flowers, in Shape of a Corymbus; these appear in *June*, and are succeeded by oblong channelled Seeds, which ripen in Autumn.

This has by some Persons been thought to be the Hemlock of the Ancients, their Conjectures being founded upon the Plant, answering in many Particulars the Description of that Plant, and also from the poisonous Quality of this, together with its foetid Scent; and as this grows naturally in many Parts of *Asia*, they have been induced to believe it might be the same.

All these Plants are preserved in Botanick Gardens for Variety, but are seldom cultivated any where else; they rise easily from Seeds, which should be sown in Autumn, and the Plants afterward treated as the first, they love a moist Soil, and a shady Situation.

LIGUSTRUM. *Tourn. Inst. R. H. 596. Tab. 367. Lin. Gen. Pl. 18. Privet; in French, Troëne.*

The Characters are,

The Flower has a small tubular Empalement, cut at the Top into 4 obtuse Segments. It hath 1 Funnel-shaped Petal, with a cylindrical Tube cut into 4 oval Segments at the Top, which spread open. It hath 2 Stamina which stand opposite, terminated by erect Summits which are the Length of the Petal, and 1 roundish Germen supporting a short Style, crowned by an obtuse bifid Stigma. The Germen turns to a smooth round Berry with 1 Cell, inclosing 2 oblong Seeds, flat on one Side but convex on the other.

The Species are,

1. LIGUSTRUM foliis lanceolato-ovatis obtusis. Privet with Spear shaped, oval, obtuse Leaves. *Ligustrum Germanicum. C. B. P. 475. The common Privet.*

2. LIGUSTRUM foliis lanceolatis acutis. Privet with Spear-shaped Leaves. *Ligustrum foliis majoribus & magis acuminatis toto anno folia retinens. Pluk. Alm. 217. Privet with larger and acute pointed Leaves, which continue all the Year, commonly called the Italian ever-green Privet.*

The 1st Sort grows common in the Hedges in most Parts of *England*, where it rises 15 or 16 Feet high, with a woody Stem covered with a smooth gray Bark, sending out many lateral Branches garnished with Spear-shaped, oval, smooth Leaves, ending with obtuse Points; they are placed by Pairs opposite, sitting close to the Branches, and are of a dark green. The Flowers are produced in thick Spikes at the End of the Branches; they are white, with one tubular Petal cut at the Top into 4 Parts, which spread open. These come out in

June, and are succeeded by small round black Berries which ripen in Autumn; each of these contain 2 Seeds. The Leaves of this Sort frequently remain green till after *Christmas*, when they alter their Colour and fall off. There are 2 Varieties of this Sort, 1 with white, and the other hath Leaves variegated with yellow; but in order to preserve these Varieties, they should be planted in poor Land, for if they are in a rich Soil, they will grow vigorous and soon become plain.

The other Sort grows naturally in *Italy*; this rises with a stronger Stalk than the former, the Branches are less pliable and grow more erect; their Bark is of a lighter Colour, the Leaves are much larger, and end in acute Points; they are also of a brighter green, and continue upon the Shrubs in Verdure, till they are thrust off by the young Leaves in the Spring, as the *Phillyrea* and most other Ever-greens do, so that it is undoubtedly a distinct Sort, though many have supposed they were the same. The Flowers of this are rather larger than those of the common Sort, and are not often succeeded by Berries in this Country.

The Leaves and Flowers of the first Sort are used in Medicine, they are reckoned to be cooling, drying, and restraining, good for Ulcers and Inflammations of the Mouth and Throat, bleeding of the Gums, and Relaxation of the Uvula.

This Shrub is frequently cultivated in the Nurseries near *London*, to furnish the small Gardens and Balconies in the City, it being one of the few Plants which will thrive in the Smoke of *London*; but although it will some Years in the close Part of the Town, yet it seldom produces Flowers after the first Year, unless it is in some open Places, where there is a free Air. In the Country, the Leaves of this Plant will continue green great Part of the Winter. It flowers in *June*, and the Berries ripen in Autumn, which generally hang upon the Branches till *Christmas*.

The *Italian* Sort is now generally preferred to the common Sort for planting in Gardens, the Leaves being larger and continuing green all the Year, renders it more valuable; and being so hardy as to resist the greatest Cold in this Country, it may be planted in any Situation where the common Sort will thrive. I have frequently planted it under the dropping of large Trees, where I find it will thrive better than most other Shrubs.

These Plants are easily propagated by Laying down their tender Shoots in Autumn, which in one Year's Time will be rooted enough to transplant; when they may be removed to the Places where they are designed to remain, or planted in a Nursery for two or three Years, where they may be trained for the Purposes designed.

They are also propagated by Suckers, which these Plants send forth in great Plenty; but these are too apt to put out a great Number of Suckers from their Roots, are not easily kept within Bounds; nor do the Plants rise so high, as those propagated by Layers, therefore this Method should be preferred.

They may also be propagated by Cuttings, which, if planted in Autumn on a shady Border and in a loamy Soil, will take Root very freely, and may be afterward treated as the Layers.

But the strongest and best Plants, are those raised from Seeds; indeed, this is a much more tedious Method than the other, so is seldom practised, for the Seeds generally lie a Year in the Ground before they vegetate; therefore, whoever would propagate the Plants in this Method, should gather the Berries and put them in a Pot with Sand between them, and bury the Pots in the Ground, as is practised for Holly Berries and Haws, and after they have lain a Year in the Ground, take them up and sow them on a Border exposed to the East, where the Plants will come up the following Spring, and these will make great Progress after they have gotten some Strength, and these will grow upright, and not send out Suckers like the other.

Formerly these Plants were greatly in Use for Hedges, but since so many others of greater Beauty have been introduced, which are much preferable to these for such Purposes, they have been intirely rejected, the Trouble of keeping them in Order being very great; nor are the Hedges made with them ever so thick and handsome, as those made with divers other Plants.

The two variegated Kinds are pretty Varieties among other striped Shrubs. These may be propagated by budding, or inarching them upon the plain Sort, as also by laying down their Branches; but as they seldom shoot so fast, as to produce many Branches proper for Layers, the other Method is chiefly used. The Silver striped Sort is somewhat tenderer than the plain, but will endure the open Air, if planted in a dry Soil and in a warm Situation.

LILAC. See Syringa.

LILIASTRUM. See Hemerocallis.

LILIO-ASPHODELUS. See Hemerocallis and Crinum.

LILIO-FRITILLARIA. See Fritillaria.

LILIO-HYACINTHUS. See Scilla.

LILIO-NARCISSUS. See Amaryllis.

LILIUM. *Tourn. Inst. R. H.* 369. *Tab.* 191. *Lin. Gen. Pl.* 371. the Lily; in French, *Lis*.

The Characters are,

The Flower has no Empalement, but hath 6 Petals narrow at their Base, but broad, obtuse, and reflexed at their Points. The Flower is of the open Bell Shape, the Petals are thick, obtuse, and keel-shaped on their Back, each Petal has a narrow longitudinal Nectarium at their Base. It hath 6 Stamina which are erect and shorter than the Petals, terminated by oblong prostrate Summits, with a cylindrical oblong Germen having 6 Furrows, supporting a cylindrical Style the Length of the Petals, crowned by a thick triangular Stigma. The Germen becomes an oblong Capsule with 6 rough Furrows hollowed at the Top, having 3 Cells filled with flat half round Seeds lying above each other, in a double Order.

The Species are,

1. *LILIUM foliis sparsis, corollis campanulatis erectis, intus glabris.* Lily with sparsed Leaves, and a Bell-shaped erect Flower which is smooth within. *Lilium album, flore erecto & vulgare.* C. B. P. 76. Common white Lily with an erect Flower.

2. *LILIUM foliis sparsis, corollis campanulatis cernuis, petalis basi angustioribus.* Lily with sparsed Leaves, and a Bell-shaped nodding Flower whose Petals are narrower

at their Base. *Lilium album, floribus dependentibus, sive peregrinum.* C. B. P. 76. White foreign Lily with pendent Flowers.

3. *LILIUM foliis sparsis, corollis campanulatis erectis, intus scabris.* Hort. Cliff. 120. Lily with sparsed Leaves, and an erect Bell-shaped Flower rough within. *Lilium purpureo-croceum majus.* C. B. P. 76. Greater Lily with a purple Saffron-coloured Flower, commonly called Orange Lily.

4. *LILIUM humile, foliis linearibus sparsis, corollis campanulatis erectis, caule bulbifero.* Dwarf Lily with narrow sparsed Leaves, erect Bell-shaped Flowers, and a Stalk bearing Bulbs. *Lilium bulbiferum minus.* C. B. P. 77. Smaller Bulb-bearing Lily, by some called the fiery Lily.

5. *LILIUM foliis sparsis subulatis, floribus reflexis, corollis revolutis.* Hort. Cliff. 120. Lily with Awl-shaped sparsed Leaves and reflexed Flowers, whose Petals are turned backward. *Lilium rubrum angustifolium.* C. B. P. 78. Narrow leaved red Lily, or Martagon.

6. *LILIUM foliis linearibus sparsis, pedunculis longissimis.* Lily with narrow sparsed Leaves, and very long Foot Stalks to the Flowers. *Lilium brevis & gramineo folio.* C. B. P. 79. Lily with a short Grass Leaf, commonly called Martagon of Pompony.

7. *LILIUM foliis sparsis lanceolatis, floribus reflexis, corollis revolutis.* Hort. Cliff. 120. Lily with sparsed Spear-shaped Leaves, and reflexed Flowers whose Petals turn backward. *Lilium Byzantium miniatum.* C. B. P. 78. Lily of Byzantium with a Carmine Flower, commonly called the scarlet Martagon.

8. *LILIUM foliis sparsis lanceolatis, floribus pyramidalis reflexis, corollis revolutis.* Lily with sparsed Spear-shaped Leaves, and pyramidal reflexed Flowers, whose Petals turn backward. *Martagon multis & magnis floribus luteis aliis superans.* *Suvert. Icon. Pl.* 57. The great yellow Martagon.

9. *LILIUM foliis verticillatis, floribus reflexis, corollis revolutis.* Hort. Cliff. 120. Lily with Leaves growing in Whorls, and reflexed Flowers whose Petals turn backward. *Lilium floribus reflexis montanum.* C. B. P. 77. Mountain Lily with reflexed Flowers, commonly called purple Martagon.

10. *LILIUM foliis verticillatis hirsutis, floribus reflexis, corollis revolutis.* Lily with hairy Leaves growing in Whorls, and reflexed Flowers whose Petals turn backward. *Lilium floribus reflexis alterum, lanugine hirsutum.* C. B. P. 718. Another Lily with reflexed Flowers which is hairy and downy, commonly called the red Martagon.

11. *LILIUM foliis verticillatis, floribus reflexis, corollis campanulatis.* *Lin. Sp. Pl.* 303. Lily with Leaves growing in Whorls, and reflexed Bell-shaped Flowers. *Lilium f. martagon Canadense maculatum.* *Mor. Hist.* 2. p. 408. Lily or Martagon of Canada, with spotted Flowers.

12. *LILIUM foliis verticillatis, floribus erectis, corollis campanulatis.* *Amoen. Acad.* 2. p. 348. Lily with Leaves growing in Whorls, and an erect Bell-shaped Flower.

13. *LILIUM foliis verticillatis brevibus, corollis campanulatis, unguibus petalorum angustioribus, floribus erectis.* *Icon. Tab.* 165. Lily with very short Leaves growing in Whorls, and Bell-shaped Flowers whose Petals are very narrow at their Base.

There

There is a greater Variety of Martagons than are here mentioned, but as they are supposed to be only accidental arising from Culture, so I thought it would be to little Purpose to insert them here, therefore I shall only give their common Titles hereafter.

The common white Lily is so well known as to need no Description; this grows naturally in *Palestine* and *Syria*, but has been long cultivated in all the Gardens of *Europe*. It is so hardy that no Frost ever injures the Roots, and it propagates so fast by Offsets from the Roots, that it is little regarded, though there is great Beauty in the Flowers, and they emit an agreeable Odour. Of this Sort there are the following Varieties.

The white Lily striped with purple.

The white Lily with variegated Leaves.

The white Lily with double Flowers.

These are Varieties which have accidentally risen from Culture; the Sort with variegated Flowers, has not been in *England* much more than 30 Years, but is now very common in most of the Gardens, and is by some Persons esteemed for the Variety of its purple Stripes; but as the pure white of the Flower is stained by the purple, so as to appear of a dull Colour, many prefer the common white Lily.

The Sort with variegated Leaves is chiefly valued for its Appearance in Winter and Spring, for as the Leaves come up early in the Autumn which spread themselves flat on the Ground, and being finely edged with broad yellow Stripes, they make a pretty Appearance during the Winter and Spring Months. The Flowers are the same as those of the common Sort, but appear earlier in Summer, which may be occasioned by the Roots being weaker than those of the plain Sort, for all variegated Plants are weaker than those which are plain.

The white Lily with double Flowers, is less valuable than either of the other, because their Flowers never open well, unless they are covered with Glasses to shelter them from the Rain and Dew, so often rot without expanding. These Flowers have none of the agreeable Odour which the single Sort is valued for, even when they open the fairest; for as by the Multiplicity of Petals in the Flowers, the Parts of Generation are destroyed, there is a Want of the fecundating Powder from whence the Odour is sent out.

The Roots, Leaves, and Flowers, of the common white Lily, are used in Medicine; the Roots are frequently used to soften, ripen, and digest, Tumours and hard Swellings. *Matthiolus* says, that the distilled Water of the Flowers, is properly and successfully given to Women in hard Labour; and the distilled Water of the Leaves, is of great Use in Distempers of the Lungs.

The white Lily with dependent Flowers, was originally brought from *Constantinople*. This is by some supposed to be only a Variety of the common Sort, but is undoubtedly a distinct Species; the Stalk is much slenderer than the common, the Leaves are narrower and fewer in Number; the Flowers are not quite so large, and the Petals are more contracted at their Base; these always hang downward, whereas those of the common Sort grow erect. The Stalks of this Kind sometimes are very broad and flat, and appear as if two or three were joined together; when this happens, they sustain

from 60 to 100 Flowers, and sometimes more; this has occasioned many to think it a different Sort, who have mentioned this with broad Stalks and many Flowers as a distinct Species, though it is accidental, for the same Root scarce ever produces the same two Years.

These Sorts are easily propagated by Offsets, which the Roots send out in so great Plenty, as to make it necessary to take them off every other, or at most every third Year, to prevent their weakening the principal Roots. The Time for removing the Roots is the End of *August*, soon after the Stalks decay, for if they are left longer in the Ground, they will soon put out new Fibres and Leaves, when it will be improper to remove them, because that will prevent their flowering the following Summer. They will thrive in almost any Soil or Situation, and as they grow tall and spread, they must be allowed Room; therefore in small Gardens they take up too much Space, but in large Borders they are very ornamental.

The common Orange or red Lily is as well known in the *English* Gardens, as the white Lily, and has been as long cultivated here. This grows naturally in *Austria*, and some Parts of *Italy*. This Sort multiplies very fast by Offsets from the Roots, and is now so common, as to be almost rejected; however, in large Gardens these should not be wanting, for they make a good Appearance when in flower, if they are properly disposed. Of this Sort there are the following Varieties:

The Orange Lily with double Flowers.

The Orange Lily with variegated Leaves.

The smaller Orange Lily.

These Varieties have been obtained by Culture, and are preserved in the Gardens of Florists. They all flower in *June* and *July*, and their Stalks decay in *September*, when the Roots may be transplanted, and their Offsets taken off, which should be done once in 2 or 3 Years, otherwise their Bunches will be too large, and the Flower Stalks weak. This doth not put out new Roots till toward Spring, so that the Roots may be transplanted any Time after the Stalks decay till *Christmas*. It will thrive in any Soil or Situation, but will be strongest in a soft gentle Loam not too moist.

The bulb-bearing fiery Lily, seldom rises much more than Half the Height of the former, the Leaves are narrower, the Flowers are smaller and of a brighter Flame Colour; they are fewer in Number, and stand more erect. These come out a Month before the common Sort, and the Stalks put out Bulbs at every Joint, which, if taken off, when the Stalks decay, and planted, will produce Plants, so that it may be propagated in Plenty. There are several Varieties of this, which are mentioned as distinct Species, but are supposed to have been produced by Culture. These are,

The greater broad leaved Bulb-bearing Lily.

The many flowered Bulb-bearing Lily.

The small Bulb-bearing Lily.

The hoary Bulb-bearing Lily.

All these Sorts of Lilies will thrive under the Shade of Trees, so may be introduced in Plantations, and on the Borders of Woods, where they will have a good Effect during the Time they are in flower.

There is a great Variety of the Martagon Lily; these differ from the common Lilies, in having their

Petals

Petals reflexed backward in Form of a *Turk's Turbant*, from whence many give them the Title of *Turk's Cap*. In the Gardens of the Florists, particularly those in *Holland*, they make a great Variety of these Flowers, amounting to the Number of thirty or upward; but in the *English* Gardens, I have not observed more than half that Number, and most of these are accidental, for those before enumerated are all that I think may be supposed specifically different. However, for the Sake of such as are curious in collecting these Sorts of Flowers, I shall here mention all those Varieties which are to be found in the *English* Gardens.

The common Martagon with double Flowers.

The white Martagon.

The double white Martagon.

The white spotted Martagon.

The Imperial Martagon.

The early scarlet Martagon.

The *Constantinople* Vermilion Martagon.

The common Martagon with red Flowers, which is the 5th Sort before enumerated, has very narrow Leaves, growing without Order. The Stalk rises near 3 Feet high, sustaining at the Top 8 or 10 bright red Flowers, which stand at a Distance from each other. These appear in *June*, and the Stalks decay in *August*, soon after which Time the Roots may be transplanted.

The 6th Sort is called Martagon of *Pompony*; the Stalks of this rise higher than those of the former, the Leaves are shorter and set closer upon the Stalks; each of these Stalks sustain from 15 to 30 Flowers, of a very bright red approaching to scarlet. The Foot Stalks of the Flowers are very long, so that the Head of Flowers spreads out very wide; these hang downward, but their Petals are reflexed quite back. This flowers soon after the 5th Sort.

The 7th Sort is commonly known by the Title of scarlet Martagon; this rises with a Stalk from 3 to 4 Feet high, the Leaves are much broader than those of the former Sorts, and appear as if they were edged with white; they are placed very closely upon the Stalks, but without any Order. The Flowers are produced at the Top of the Stalk, they are of a bright scarlet, and are seldom more than 5 or 6 in Number. This flowers late in *July*, and in cool Seasons will continue in Beauty great Part of *August*.

The 8th Sort rises with a strong Stalk from 4 to 5 Feet high, garnished with Leaves as broad as those of the last mentioned, which stand without Order; the Flowers are produced in Form of a Pyramid, on the upper Part of the Stalk. When the Roots of this Kind are strong, they produce 40 or 50 Flowers upon each Stalk; they are large, of a yellow Colour, spotted with dark Spots, so make a fine Appearance; but the Flowers have so disagreeable a strong Scent, that few Persons can endure to be near them, which has occasioned their being thrown out of most *English* Gardens. This flowers the latter End of *June*.

The 9th Sort is frequently called the purple Martagon, though in most of the old Gardens it is known simply by the Title of *Turk's Cap*. This rises with a strong Stalk from 3 to 4 Feet high, garnished by pretty broad Leaves, which stand in Whorls round the Stalk, at certain Distances. The Flowers are of a dark purplish

Colour, with some Spots of black; they are produced in loose Spikes on the Top of the Stalks. This flowers in *June*, the Flowers of this Sort have a very disagreeable Odour when near, but it is not so offensive as the former Sort.

The 10th Sort is very like the former, but the Leaves are narrower; the Whorls stand farther asunder, the Leaves and Stalks are somewhat hairy, and the Buds of the Flowers are covered with a soft Down; the Flowers are of a brighter Colour with few Spots, and come out earlier in the Summer, though the Stalks appear much later above Ground. This flowers early in *June*, and the Stalks decay in *August*.

The 11th Sort is commonly called the *Canada* Martagon, as it was first brought to *Europe* from thence, but it grows naturally in most Parts of *North America*. The Roots of this are oblong and large, made up of Scales like the other Sorts; the Stalks rise from 4 to 5 Feet high, garnished with oblong pointed Leaves placed in Whorls round the Stalk. The Flowers are produced toward the Top of the Stalk, they are large, of a yellow Colour, spotted with black, which are shaped like the Flowers of the *Orange Lily*; the Petals of them are not turned backward, like those of the other Sorts of Martagon. This flowers the Beginning of *August*, and when the Roots are large, the Stalks have a good Number of Flowers, so make a fine Appearance. There are 2 Varieties of this, one with larger and deeper coloured Flowers than the other, but they are supposed to have accidentally come from Seeds.

The 12th Sort grows naturally in *North America*, and is also mentioned to grow at *Campschatski*. This hath erect Flowers shaped like those of the *Canada* Martagon, but the Petals of this are oval, not narrowed at their Base as are those, and they sit close to the Foot Stalk; the Flowers are of a deeper Colour, and not so much spotted as the other Sort. It flowers in *July*, and the Stalks decay in the Autumn.

This Sort is at present rare in *England*, being in very few Gardens. It was sent me a few Years ago from *Maryland*, but after it had flowered the Root perished.

The 13th Sort was sent me from *Pennsylvania* by Mr. *John Bartram*, who found it growing naturally in that Country. The Root of this is smaller than those of the other Sorts, it is scaly and white, in the Spring it sends out 1 upright Stalk near a Foot and a Half high; the Leaves come out in Whorls round the Stalks, at Distances; they are short, pretty broad, and have obtuse Points. The Stalk is terminated by 2 Flowers which stand erect, upon short separate Foot Stalks; they are shaped like the Flowers of the Bulb-bearing fiery Lilly, but the Petals are narrower at their Base, so that there are Spaces between each, but upward they enlarge and join, forming a Sort of open Bell-shaped Flower; their Petals are Spear-shaped, so are contracted at the Top, where they terminate in acute Points. The Flowers are of a bright purple Colour, marked with several dark purple Spots toward their Base. In the Center of the Flower is situated a six cornered Germen supporting a strong Style, crowned by a three cornered Stigma; round this are situated six Awl-shaped Stamina, terminated by oblong prostrate Summits; these are a little shorter than the Style. The Germen afterward turns

to an oblong Capsule with 3 Angles, blunt at the Top, divided into 3 Cells, filled with flat Seeds lying over each other. It flowers in *July*, and the Seeds ripen the latter End of *September*.

This Sort is at present very rare in the *English* Gardens, but as it has ripened Seeds the last Season here, it may in a few Years become very common. As this Sort grows in a small Compass, and the Flowers have no ill Scent, it is proper Furniture for the Borders of small Gardens. The Stalks of this decay soon after the Seeds are ripe, when it will be a proper Time to remove the Roots, for these do not put out new Fibres till after *Christmas*. The Roots of this Kind do not put out many Offsets, so that unless it is propagated by Seeds, it cannot be increased in any Plenty.

All the Sorts of Martagon may be propagated by Offsets from the Roots, as the common Lilly, which some of the Sorts produce in as great Plenty, but there are others which send out very few Offsets, which occasions their present Scarcity. The Roots of all the Sorts of Martagon may be safely taken up when their Stalks decay, and if there is a Necessity for keeping the Roots out of the Ground, if they are wrapped in dry Moss, they will keep perfectly well for two Months, so that if the Roots are to be transported to a distant Place, this Precaution of wrapping them up is necessary; but where they are to be planted in the same Garden, there will be no Occasion for this, especially if they are not kept too long out of the Ground; for if the Place is ready to receive the Roots, they should be planted the Beginning of *October*; so if the Roots are put in a dry cool Place, they will keep very good without any farther Care; but if the Ground is not ready to receive them till later in the Year, then it will be proper to cover the Roots with dry Sand, or wrap them in Moss to exclude the Air, which, if they are much exposed to, will cause their Scales to shrink, which weakens the Roots, and is sometimes the Occasion of their rotting.

These Roots should be planted 5 or 6 Inches deep in the Ground, especially if the Soil is light and dry; but where the Ground is moist, it will be proper to raise the Borders in which these are to be planted, 5 or 6 Inches above the Level of the Surface of the Ground; for if the Water rises so high in Winter as to come near the Roots, it will cause them to rot; and where the Soil is naturally stiff and subject to bind, there should be a good Quantity of Sea Coal Ashes or rough Sand, well mixed in the Border, to separate the Parts, and prevent the Ground from binding in the Spring, otherwise the Roots will not send up very strong Stalks, nor will they make so good Increase.

As the *Canada* Martagon, the Martagon of *Pompony*, and the last Sort, are somewhat tenderer than the others, if in very severe Winters the Surface of the Ground over them is covered with old Tanners Bark or Sea Coal Ashes, it will be a good Way to secure them from being injured by the Frost; and in the Spring the Covering may be removed, before the Roots shoot up their Stalks.

The tall growing Sorts of these are only proper for large Gardens, so they may be intermixed with the white and Orange Lillies, the tall growing Irises, and other Flowers of the same Growth, where, if they are not too much crowded, and are properly disposed, they

will make a good Appearance; and as they flower one after another, they may be disposed according to their Seasons of flowering. There are some of the common Martagons hardy enough to thrive under the Shade of Trees, so they may be disposed in Wilderness Quarters, with the common Sort of Lillies, where they will have a good Effect.

The Roots of all these Kinds must never be transplanted after they have made any Shoots, for that will so much weaken them (if it does not entirely kill them) as not to be recovered in less than 2 or 3 Years, as I have experienced to my Cost; for being obliged to remove a fine Collection of these Roots early in the Spring, I lost a great Part of them, and the others were long recovering their Strength.

All the Sorts of Lillies and Martagons may be propagated by sowing their Seeds, by which Method some new Varieties may be obtained, provided the Seeds are saved from the best Sorts, especially the Martagons, which are more inclinable to vary than the other Lillies, The Manner of sowing them is as follows:

You must be provided with some square Boxes about six Inches deep, which should have Holes bored in their Bottoms to let the Wet pass off: These Boxes should be filled with fresh light sandy Earth, and in the Beginning of *October*, soon after the Seeds are ripe, you must sow them thereon pretty thick, covering them over with light sifted Earth about half an Inch; then place the Boxes where they may have the Morning Sun only, observing if the Season should prove dry, to refresh them often with Water, as also to pull out all Weeds which may be produced: In this Situation the Boxes should remain until the Beginning of *November*, when you must remove them where they may have as much Sun as possible, as also be screened from the cold North and East Winds during the Winter Season; but in the Spring of the Year, about the Beginning of *April*, you must remove the Boxes into their former Position; for now the young Plants will appear above Ground, which are impatient of too much Heat; besides, the Earth in the Boxes will dry too fast at this Season, if exposed to the full Sun at Noon. You must also observe at this Season, to keep them entirely clear from Weeds, as also to refresh them gently with Water, if the Season should prove dry, but this must be done sparingly and with Caution. In this Place you should let the Boxes remain until the Beginning of *August*, at which Time you should prepare some Beds of the above-mentioned fresh light Earth, which must be levelled very even; then take the Earth out of the Boxes, together with the small Bulbs, and strew it equally over the Beds, covering it over about half an Inch thick with fine sifted Earth; and if the Season should prove very hot and dry, you would do well to shade the Beds in the Middle of the Day from the great Heat of the Sun; and refresh them now and then with Water.

You must also observe to keep them entirely clear from Weeds, and if the following Winter should prove very cold, you must cover the Beds with Peas Haulm, or some other light covering, to keep out the Frost, which would prejudice the Roots, if suffered to enter deep into the Ground (especially while they are so young): But you must never let the Covering remain on in mild Weather, which would also be very injurious to them.

In February, when the hard Frosts are over, you should gently clear off the Earth upon the Surface of the Beds (which during the Winter-Season, will often have contracted a Mossiness); and sift a little fresh Earth equally over the Beds, which will greatly encourage the Roots; but in doing this, you must be very careful not to stir the Ground so deep as to injure the Roots; nor should you defer doing it too late, lest the Shoots should be coming up, which, by this Operation might be broken, and greatly hurt; and as the Season advances, you must be careful to clear them from Weeds, and in dry Weather to water them; and in very hot Days, if you shade them from the Sun, it will be of great Service to them; but this need not be done till the latter End of April or Beginning of May, when the Season is sometimes very hot and dry.

When their Leaves are quite decayed, you should stir the Surface of the Beds again (but do not go too deep;) which will prevent the Weeds from growing very fast, and be of Service to the Roots; and in September you must sift some more fresh Earth over the Beds about half an Inch thick, and in Winter and Spring you must manage them as was directed for the preceding Year.

In September following these Roots will require to be transplanted to a greater Distance, when you must prepare some Beds of the same fresh light Earth, as was before directed, making them level; then take up the Roots and transplant them into the Beds, placing them about 8 Inches asunder, observing to put the Roots with their Buds uppermost, and about 4 Inches below the Surface.

This Work should be done when the Weather is moist, for if the Roots are transplanted in a very dry Season, and there doth not happen Rain soon after, they will take a Mouldiness which many Times rots them.

You must also observe, as was before directed, to keep the Beds entirely clear from Weeds; and in Winter, if the Frost should be very severe, you must cover them with Peas Haulm, to prevent the Roots from being injured thereby; and in the Spring you should take off the Earth from the Surface of the Beds, as before, laying some fresh thereon, and so continue the Summer and Winter's Work, as before.

The 2d Year after being planted in these Beds, the strongest Roots will begin to flower; at which Time, if you observe any peculiar Varieties, you should put down a Stick by each of those Roots to mark them; which may be taken up when their Leaves are decayed, and removed into the Borders of the Flower Garden, or transplanted into other Beds at a greater Distance, to encourage them to flower strong. But you cannot be a Judge which of those will be good by their first Flowers, therefore you should never reject any of them until they have flowered two or three Years; for many Times, some of these Flowers will make but a mean Appearance the first Year, and afterwards become fair handsome Flowers, when they have obtained Strength; so that you should suffer all such, of whose Worth you are not assured, to remain undisturbed two or three Years, that you may be ascertained which of them are worthy preserving, these should be removed into the Flower Garden at a proper Season; but the ordinary ones may be rejected, or planted in shady outer Walks,

where, though they are mean Flowers, they will appear well enough.

LILIUM CONVALLIUM. See Convallaria.

LILIUM PERSICUM. See Fritillaria.

LILIUM SUPERBUM. See Gloriosa.

LIME TREE. See Tilia.

LIMODORUM. Flor. Virg. 110. Lin. Gen. Pl. 904. Helleborine. Tourn. Inst. R. H. 436. Tab. 249. Baillard Hellebore.

The Characters are,

It hath a single naked Flower Stalk, arising immediately from the Root. The Flowers have no Empalement, but a Spatba (or Sheath) situated below them. The Flower is composed of 5 oval Petals, which are dissimilar. The Side Petals spread open, but the 2 upper are connected together; the lower one is Keel-shaped, so that it has much the Appearance of a Butterfly Flower. Within the Petals is situated a concave Nectarium of 1 Leaf, as long as the Petals. It has 2 Stamina as long as the Petals, terminated by 2 oval Summits. It hath a Column-shaped Germen, situated under the Flower, as long as the Petals, supporting a slender Style, fastened to the Stamina, crowned by a Funnel-shaped Stigma. The Column-shaped Germen turns to a Capsule of the same Form, opening with 3 Valves, having 1 Cell, in which are lodged 4 or 5 roundish Seeds.

We have but one Species of this Genus at present in England, viz.

1. LIMODORUM fallis longis angustis acuminatis, pedunculis longissimis. Limodorum with long narrow Leaves ending in acute Points, and a very long Foot Stalk to the Flower. Helleborine Americana; radice tuberosa; foliis longis angustis, caule nudo, floribus ex rubro palliis purpureiscentibus. Martyn. Cent. 1. Pl. 50. Icon. Tab. 165. American Baillard Hellebore with a tuberosé Root, long narrow Leaves, a naked Stalk, and Flowers of a red and pale purplish Colour.

This Plant grows naturally in Jamaica, from whence it was sent me by the late Dr. Houstoun, with the following Title, Helleborine purpurea, tuberosa radice. Plum. Cat. 9. so that it is the same Plant with Plumier's. It also grows naturally in the French Islands of America. The Roots of this were afterward brought from the Bahama Islands, where it was found growing naturally, and it was since sent me from Pennsylvania, by Mr. John Bartram, who found it growing naturally in that Country.

The Root of this Plant is shaped like that of the Saffron, but the outer Cover is of a darker brown Colour, from this come out 3 or 4 Leaves, according to the Size and Strength of the Root; these are 9 or 10 Inches long, and near three Quarters of an Inch broad in the Middle, being contracted toward both Ends, terminating with long acute Points; they have 5 longitudinal Furrows, like the first Leaves of young Palms; these Leaves come out in the Spring, and frequently decay the following Winter, but when the Plants are kept in a warm Stove; they are seldom destitute of Leaves. The Flower Stalk arises immediately from the Root, on one Side of the Leaves; this is naked, smooth, and of a purplish Colour toward the Top. It is near a Foot and a Half high, and terminated by a loose Spike of purplish red Flowers, standing

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ing on short Foot Stalks; they are composed of 5 or 6 Petals, the two upper are connected together, forming a Sort of Helmet, the two Side Petals expand like the Wings of a Butterfly Flower, and the lower form a Sort of Keel. In the Center of the Petals is situated a Column-shaped Germen, which rises from the Base of the Petals, supporting a slender Style, to which adhere 2 Stamina; terminated by oval Summits, as the Style is by a Funnel-shaped Stigma; after the Flowers are faded, the Germen becomes a three-cornered Column-shaped Capsule, with 1 Cell, opening with 3 Valves, containing several roundish Seeds.

This Plant is not constant to any particular Season of flowering; for sometimes it has flowered in April and May, and in other Years it has not flowered till September, or October, but the most usual Time of its flowering, is in June and July, when the Flowers appear early in the Spring; they are succeeded by Seed Vessels, which sometimes ripen in this Country.

There are several other Species of this Genus mentioned by Father Plumier, but I have only seen one more than this here mentioned, which had oval obtuse Leaves, furrowed in the same Manner as the Leaves of this Sort, but were of a thicker Consistence; the Flowers of this I have not yet seen. The Root was sent me from Maryland, where it grew naturally in a Thicket.

The Sort here described is too tender to thrive in the open Air in England, and although with Care it may be preserved in a warm Green-house, yet it seldom flowers in such a Situation, so that to have it in Perfection, it is necessary to keep it in the Tan Bed in the Stove in Winter, and if in Summer the Pots are plunged in a Tan Bed under a deep Frame, the Plants will thrive and flower as strong as in their native Soil.

It is propagated by Offsets from the Root, which are sent out pretty freely when the Plants are in Vigour; these should be taken off, and the Roots transplanted, when they are the most destitute of Leaves. The Roots should have a soft loamy Soil, and must have but little Water, especially in Winter.

LIMODORUM. See Orchis.

LIMON. Tourn. Inst. R. H. 621. Citrus. Lin. Gen. 807. The Lemon Tree; in French, Limonier.

The Characters are,

The Flower is composed of 5 oblong thick Petals, which are a little concave, spreading open; these sit in a small Empalement of 1 Leaf, indented in 5 Parts at the Top. It hath about 10 or 12 Stamina, joined in three or four Bodies, and terminated by oblong Summits. It hath an oval Germen, supporting a cylindrical Style the Length of the Stamina, crowned by a globular Summit. The Germen becomes an oval Fruit, with a fleshy Rind, inclosing a thin pulpy Fruit with several Cells, each having 2 hard Seeds.

The Species are,

1. LIMON foliis ovato-lanceolatis acuminatis, subserratis. Limon Tree with oval Spear-shaped acute pointed Leaves, a little sawed. Limon vulgaris. Ferr. Hesp. 193. The common Limon.

2. LIMON foliis ovatis integris, ramis subspinosis. Limon with oval entire Leaves, and Branches somewhat spiny. Limon acris. Ferr. Hesp. 331. The sour Limon, commonly called Lime.

3. LIMON foliis ovato-lanceolatis subserratis, fructu

conglomerato. Limon with oval Spear-shaped Leaves, somewhat sawed, and Fruit growing in Clusters. Limon fructu racemoso. Tourn. Inst. R. H. 621. Limon with Fruit growing in Bunches.

There are great Varieties of this Fruit, preserved in some of the Italian Gardens, and in both the Indies there are several which have not yet been introduced to the European Gardens; but these, like Apples and Pears, may be multiplied without End from Seeds, therefore I shall only mention the most remarkable Varieties to be found in the English Gardens at present, as it would be to little Purpose to enumerate all those which are mentioned in the foreign Catalogues.

The Limon Tree with variegated Leaves.

The sweet Limon.

The Pear-shaped Limon.

The imperial Limon.

The Limon called Adam's Apple.

The furrowed Limon.

The childing Limon.

The Limon with double Flowers.

The common Limon and the sweet Limon are brought to England from Spain and Portugal, in great Plenty, but the Fruit of the latter are not much esteemed. The Lime is not often brought to England, nor is that Fruit much cultivated in Europe, but in the West-Indies it is preferred to the Limon, the Juice being reckoned wholesomer, and the Acid is more agreeable to the Palate; there are several Varieties of this Fruit in the West-Indies, some of which have a sweet Juice, but those are not greatly esteemed, and as the Inhabitants of those Islands do not propagate these Fruits by Grafting or Budding, being contented with sowing their Seeds, there is no Doubt but a great Variety of them may be found by any Person who is curious in distinguishing them.

As I have never known the common Limon ever vary to the Lime, when raised from Seeds, nor the Lime vary to the Limon. I suppose they are specifically different, for I have frequently raised both from Seeds, and have always found them continue their Difference in Leaf and Branch, for I never waited to see their Fruit, as they were only designed for Stocks, to bud other Sorts into them.

The Pear-shaped Limon is a small Fruit, with very little Juice, so is not much propagated any where, the Curious who have Room and Convenience for keeping many of these Trees, preserve a Plant or two of this Sort for Variety.

The Fruit of the imperial Limon is sometimes brought to England from Italy, but I do not remember to have seen any of this Sort imported from Spain or Portugal, so that I suppose they are not much propagated in either of those Countries, for the Inhabitants of both those fine Countries are so very incurious, especially in Horticulture, as to trust almost entirely to Nature, that the Products of their Gardens are inferior both in Numbers and Quality to many other Parts of Europe, where the Climate is much less favourable for these Productions. And in the Article we are now upon, there are many strong Instances of the Slothfulness, or Incuriosity of the Portuguese particularly, for they had many of the most curious Sorts of Orange, Limon, and Citron Trees, brought from the Indies to Portugal formerly,

which seemed to thrive almost as well there, as in their native Soil, and yet they have not been propagated; there are a few Trees of these Sorts still remaining in some neglected Gardens near *Lisbon*, almost unnoticed by the Inhabitants. As there are also several curious Trees and Plants, which were formerly introduced from both *Indies*, some of which thrive and produce Fruit amidst the wild Bushes and Weeds, with which those Gardens are spread over.

All these Sorts are propagated by budding or inarching them either on Stocks of Lemons or Citrons, produced from Seeds, but they will not so readily unite on Orange Stocks, for which Reason the Citrons are preferable to either Oranges or Lemons for Stocks, as they readily join with either Sort, and being of larger Growth, cause the Buds of the other Sorts to shoot much stronger than if they were on Stocks of their own Kind. The Method of raising these Stocks, and the Manner of budding them, being already exhibited under the Article *Aurantium*, it would be superfluous to repeat it here.

The Culture of the Lemon being the same with that of the Orange Tree, it would be also needless to repeat it here; therefore I shall only observe, that the common Lemons are somewhat hardier than the Oranges, and will bring their Fruit to Maturity with us better than they will do, and require to have a greater Share of fresh Air in Winter; for which Reason they should always be placed nearer to the Doors or Windows of the Green-house, and in some curious Gardens these Trees have been planted against Walls, where, by covering them with Glasses in Winter, and protecting them from severe Frost, they have produced Plenty of large Fruit; as these Trees do generally produce stronger Shoots, they require more Water to be given them than the Orange, but as to the tender Sorts, they must be treated with a little more Care, otherwise their Fruit will fall in Winter, and come to nothing; these Things being fully exhibited before, I refer the Reader (as I hinted) to the Article *Aurantium*, where their Culture is fully set forth.

LIMONIUM. *Tourn. Inst. R. H. 341. Tab. 177. Satice. Lin. Gen. Pl. 348.* Sea Lavender.

The Characters are,

The Flowers have an imbricated Perianthium, rising one above another. The Flower is Funnel-shaped, composed of 5 Petals, narrow at their Base, but broad and spreading at the Top. It hath 5 Awl-shaped Stamens, shorter than the Petals, crowned by prostrate Summits. It hath a small Germen, supporting 5 slender Styles, crowned by pointed Stigmas. The Empalement of the Flower afterwards becomes a Capsule, shut close at the Neck, but expanded above where the Seeds are lodged.

The Species are,

1. **LIMONIUM** foliis ovato-lanceolatis, caule tereti nudo paniculato. Sea Lavender with oval Spear-shaped Leaves, and a taper paniculated Stalk. *Limonium maritimum majus.* C. B. P. 192. Common great Sea Lavender.

2. **LIMONIUM** foliis oblongo-ovatis, caule paniculato patulo, spicis florum brevioribus. Sea Lavender with oblong oval Leaves, a spreading paniculated Stalk, and shorter Spikes to the Flowers. *Limonium maritimum majus alterum serotinum Narbonense.* H. R. Par. Another large late flowering Sea Lavender of Narbonne.

3. **LIMONIUM** foliis ovatis obtusis, petiolis decurrentibus, caule paniculato, spicis florum erectioribus. Sea Lavender with oval obtuse Leaves, running Foot Stalks, a paniculated Stalk, and more upright Spikes of Flowers. *Limonium maritimum minus, olea folio.* C. B. P. 192. Small Sea Lavender with an Olive Leaf.

4. **LIMONIUM** foliis lanceolatis, caule humile patulo, spicis florum tenuioribus. Sea Lavender with Spear-shaped Leaves, a low spreading Stalk, and slender Spikes of Flowers. *Limonium Anglicum minus, caulibus ramosioribus, floribus in spicis rariis sitis.* Raii Hist. 217. Lesser English Sea Lavender, with more branched Stalks, and Flowers seldom growing in a Spike.

5. **LIMONIUM** foliis lineari-lanceolatis, caule ramoso patulo, floribus distantibus uno versu dispositis. Sea Lavender with narrow Spear-shaped Leaves, a branching spreading Stalk, and Flowers placed asunder on one Side the Stalk. *Limonium Orientale, plantaginifolio, floribus umbellatis.* T. Cor. Oriental Sea Lavender with Plantain Leaves, and Flowers growing in an Umbel.

6. **LIMONIUM** foliis radicalibus alternatim pinnato-finnatis, caulibus ternis triquetris subulatis decurrentibus. Sea Lavender with the lower Leaves alternately sinuated like Wings, and those upon the Stalks three cornered, Awl-shaped, and running along the Foot Stalk. *Limonium peregrinum, foliis asplenii.* C. B. P. Foreign Sea Lavender with Spleenwort Leaves.

7. **LIMONIUM** caule fruticoso patulo, foliis lineari lanceolatis crassius, floribus solitariis distantibus. Sea Lavender with a spreading shrubby Stalk, narrow thick Spear-shaped Leaves, and Flowers growing singly at a Distance from each other. *Limonium Siculum lignosum, gallas ferens, & non ferens.* Bocc. Rar. Woody Sicilian Sea Lavender, sometimes producing Galls, at other Times not.

8. **LIMONIUM** foliis inferioribus lanceolatis hirsutis serratis, caulibus ternis linearibus acutis decurrentibus. Sea Lavender with Spear-shaped lower Leaves, which are hairy and sawed, but growing by Threes on the Stalks, narrow, acute-pointed, and running along the Stalk. *Limonium Africanum, caule alato, foliis integris hirsutis, petalo pallide flavo, calyce amœnè purpureo.* Martyn. Cent. 48. Tab. 48. African Sea Lavender with a winged Stalk, entire hairy Leaves, pale yellow Petals to the Flower, and a beautiful purple Empalement.

9. **LIMONIUM** foliis cuneiformibus, caule erecto paniculato, ramis inferioribus sterilibus nudis. Sea Lavender with Wedge-shaped Leaves, an upright paniculated Stalk, and the under Branches sterile and naked. *Limonium minus, flagellis tortuosis.* Bocc. Mus. Small Sea Lavender with twisted Shoots.

10. **LIMONIUM** caule nudo paniculato, foliis spathulatis retusis. Sea Lavender with a paniculated naked Stalk, and Spathule-shaped blunt Leaves. *Limonium maritimum minus, foliolis cordatis.* C. B. P. Small Sea Lavender with little Leaves, Heart-shaped.

11. **LIMONIUM** caule nudo paniculato, tereti, foliis tuberculatis. Sea Lavender, with a naked, taper, paniculated Stalk, and Leaves set with Tubercles. *Limonium minus annuum, bullatis foliis, vel echioides.* Bot. Monf. Small annual Sea Lavender with studded Leaves.

12. **LIMONIUM** caule erecto fruticoso, foliis lineari-lanceolatis obtusis, floribus alternis. Sea Lavender with an upright

upright shrubby Stalk, narrow Spear-shaped Leaves, ending in obtuse Points, and Flowers ranged alternately. *Limnium Aegyptiacum fruticosum, foliis lanceolatis obtusis.* Shrubby Egyptian Sea Lavender with blunt Spear-shaped Leaves.

The 1st Sort grows naturally in the Marshes, which are flowed by the Sea, in several Parts of England. The Roots of this Plant are thick, of a reddish Colour, and an astringent Taste, sending out many strong Fibres, which strike deep in the Ground, and from the upper Part of the Root come out several oval Spear-shaped Leaves, from 4 to 5 Inches long, and more than 2 broad in the Middle; they are smooth, of a pretty thick Consistence, and of a dark green. The Stalk rises upward of a Foot high, is naked of Leaves, divided into many Branches, which are again divided into smaller toward the Top; these are terminated by slender Spikes, of pale blue Flowers, ranged on one Side the Stalk above each other, coming out of narrow Covers like Sheaths; these appear in July, and are succeeded by oblong Seeds, which are inclosed in the Emplacement, ripening in Autumn.

The 2d Sort grows naturally in the South of France on the Sea Coast. The Leaves of this Sort are of an oblong oval Form; they are 6 Inches long, and 3 broad, smooth, entire, and of a deep green. The Stalk rises 15 or 16 Inches high, dividing into several spreading Branches, which are divided again into smaller, and are terminated by several short Spikes of pale blue Flowers, ranged on one Side the Foot Stalk. This Sort seldom flowers till the End of August, so never produces any good Seeds in England.

The 3d Sort grows naturally in Narbonne and Provence; this hath small, oval, obtuse Leaves, about 2 Inches long, and 1 broad, with pretty long Foot Stalks, which are bordered or winged with Part of the Leaves, which runs close to, and partly embraces the upper Part of the Root; these are of a lighter green than either of the former. The Stalk rises a Foot and a Half high, sending out Branches alternately on each Side; the lower ones being long, the others gradually diminishing to the Top, so as to form a loose Kind of Pyramid; these all point upward, and toward their Ends send out Spikes of pale blue Flowers, which are erect. This Sort flowers late in August, so never perfects Seeds in England.

The 4th Sort grows naturally in England. It was first discovered on the Sea Banks near Walton, in Essex, afterward near Maldon, in the same County, and since at the Mouth of the River that runs from Chichester, in Sussex. The Leaves of this Sort are Spear-shaped, about 3 Inches long, and 1 broad in the Middle, lessening gradually to both Ends. The Stalk rises 4 or 5 Inches high, dividing into many spreading Branches, which are very thick set with short Spikes of whitish blue Flowers. These appear in August, and the Seeds ripen in October.

The 5th Sort was discovered by Dr. Fournesfort in the Levant, from whence he sent the Seeds to the Royal Garden at Paris, where they grew, and have produced Seeds many Years, which have been communicated to many of the curious Gardens in Europe. The Leaves of this Sort are about 4 Inches long, and three Quarters of an Inch broad in the Middle, diminishing gra-

dually to both Ends. The Stalks rise about 5 or 6 Inches high, dividing into several spreading Branches, which are again divided into smaller; these are terminated by short Spikes of pale blue Flowers, ranged on one Side the Foot Stalk; the whole, when growing, being spread wide, has somewhat the Appearance of an Umbel of Flowers. This Sort flowers late in August, so never ripens Seeds here.

The 6th Sort grows naturally in Sicily and Palestine; this is a biennial Plant. The lower Leaves which spread on the Ground, are indented almost to the Middle-rib; these Indentures are alternate and blunt. The Stalks rise a Foot and a Half high, dividing upward into several Branches; these are garnished at each Joint with 3 narrow Leaves sitting close to the Stalks, from whose Base proceeds a leafy Membrane, or Wing, which runs along on both Sides the Stalk; these are rough, and a little hairy. The Stalks are terminated by Panicles of Flowers, which sit upon winged Foot Stalks, each sustaining 3 or 4 Flowers of a light blue Colour, which continue long without fading. This Sort flowers in July and August, but unless the Summer is very warm and dry, the Seeds do not ripen in England.

The 7th Sort grows naturally in Sicily; this hath a shrubby Stalk, which rises about 2 Feet high, dividing into several ligneous Branches, which spread out on every Side; the lower Part of these are closely garnished with gray Leaves, like those of the Sea Purslain, and are of as thick Consistence. The Branches are terminated by Panicles of blue Flowers, which come out singly at a Distance from each other, having long Tubes; but divide into 5 Segments upward, which spread open. This flowers from June till Autumn, but never produces Seeds in England; there is a Variety of this which bears Galls like those upon the Oak, which grows naturally in Sicily, but I do not know if it is a different Species, for those Plants which are in the English Gardens, have no Appearance of any.

The 8th Sort was raised in the Chelsea Garden, from Seeds, which were brought me from Africa; this is a biennial Plant, which dies soon after it has produced Flowers and Seeds. The lower Leaves are but few in Number; they are Spear-shaped, hairy, and slightly fawed on their Edges, about 2 Inches long, and half an Inch broad. The Stalk rises about 15 Inches high, which at each Joint is garnished with 3 narrow Leaves, ending in acute Points; from the Base of these Leaves, is continued a leafy Membrane, or Wing, running along the Stalk on each Side; these Stalks branch out but little, and are terminated by short Panicles of Flowers, whose Foot Stalks are not winged as in the former, each Foot Stalk sustains 2 or 3 Flowers of a bright blue Colour, out of the Middle of which arises another small Flower of a pale yellow Colour. This Sort flowered in July and August, 1757, but did not ripen Seeds.

The 9th Sort grows naturally in Sicily, and was found so growing on the Border of the Sea in Norfolk, by Mr. Henry Scott, a Gardener, now residing at Wybridge, in Surry. The lower Leaves of this Sort are narrow at their Base, but enlarge upward where they are broad, and rounded at the Top, in Shape of a Wedge. The Stalks are slender and stiff, rising from

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7 to 14 Inches high, sending out many slender Side Branches, all those which proceed from the lower Part of the Stalk are barren, having no Flowers, but toward the Top they have short Panicles of whitish Flowers, which are small, and sit 3 or 4 together on 1 Foot Stalk. This Sort flowers in *July* and *August*.

The 10th Sort grows naturally near the Sea, about *Marfeilles* and *Legborn*; this hath many thick fleshy Leaves, which are shaped like a Spatula, growing near the Root, and spread on the Ground; they are smooth, and of a grayish Colour. The Stalks are naked, and rise about 6 Inches high, dividing toward the Top into many smaller Branches, terminated by short crooked Panicles of small Flowers, of a pale red Colour. This Sort flowers in *August*, but never produces Seeds in this Country.

The 11th Sort grows naturally about *Montpelier* and in *Italy*; this is an annual Plant, with long narrow Leaves, set with rough Tubercles like the Leaves of *Vipers Buglofs*. The Stalks rise about 8 Inches high, dividing into 2 or 3 small Branches, terminated by reflexed short Spikes of pale blue Flowers; these come out late in *August*, and the Seeds are seldom perfected in *England*.

The 12th Sort grows naturally in *Egypt*, from whence the Seeds were sent to the Royal Garden at *Paris*, Part of which were sent me by *Dr. Bernard de Jussieu*, which grew in the *Chelsee* Garden, where there are several Plants, which have produced Flowers many Years. This rises with an upright shrubby Stalk to the Height of 7 or 8 Feet, divided upward into many Branches, garnished with narrow Spear-shaped Leaves, placed without Order; they are of a thick Consistence, and of a gray Colour, sitting close to the Branches. The Flowers are produced at the End of the Branches in loose Panicles, standing alternate on each Side the Stalk, one above another, with Intervals between them; they have pretty long Tubes, which enlarge upward, where they are cut into 5 obtuse Segments, which spread open; these are of a bright Sky blue, but fade to a purple before they fall off. The Flowers begin to appear in *July*, and there is a Succession of them till Winter.

The 1st, 2d, 3d, 4th, 5th, and 8th Sorts, are abiding Plants, which will thrive in the open Air in *England*, such of these as grow naturally in *England*, may be easily procured from the Places where they grow; these Plants may be transplanted at almost any Time of the Year, provided they are carefully taken up, preserving some Earth to their Roots, and in hot Weather to shade them till they have taken new Root; after which Time they will require no other Culture, but to keep the Ground clean from Weeds, and in the Spring to stir up the Ground between them to loosen it. As these Plants do not require much Culture, nor do they take up much Room, a few of each Sort may be allowed to have a Place in Gardens for Variety. These Plants do not propagate very fast in Gardens, so the Roots need not be removed oftener than every third Year, at which Time they may be slipped to make an Increase of them; the best Time for this is in the Autumn, that the Plants may be well rooted before the Spring, otherwise they will not flower very strong the

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following Summer. They should be planted in a loamy Soil, on an East aspected Border, where they may enjoy the Morning Sun, but screened from the great Heat in the Middle of the Day; in such a Situation the Roots will continue several Years, and flower as well as in their native Soil.

These Plants may also be propagated by Seeds, so that such of them as do not grow naturally in *England*, may be obtained by procuring their Seeds from Abroad. These should be sown on a Border exposed to the Morning Sun, and on a soft loamy Soil early in the Spring, for the Seeds lie a considerable Time in the Ground before the Plants come up; therefore the Ground must be kept entirely clean from Weeds, and if the Season should prove very dry, the Border should be watered 2 or 3 Times a Week, otherwise the Seeds will lie a whole Year before they vegetate; when the Plants come up, they must be kept clean from Weeds, and in very dry Weather watered, and in the Autumn they may be transplanted where they are designed to remain.

The 6th and 8th Sorts are biennial Plants, which rarely perfect their Seeds in *England*, so that unless fresh Seeds can be procured from warm Countries, where they ripen well, it will be very difficult to continue the Sorts. If the Seeds of these can be obtained Time enough to sow them in the Autumn, the Plants will come up the following Spring; but when they are sown in the Spring, they seldom grow the same Year. These Seeds should be sown on a Border of loamy Earth, not stiff or moist, and exposed to the South; but when the Sun is warm, the Border should be shaded with Mats, to prevent the Earth from drying too fast. When the Plants come up, they must be kept clean from Weeds, and if they are too close, some of them should be carefully taken out as soon as they are fit to remove, and planted in small Pots, placing them in the Shade till they have taken new Root; then they may be placed where they may enjoy the Morning Sun, till Autumn, when they should be put into a hot Bed Frame, where they may be screened from hard Frost, but enjoy the free Air in mild Weather; and those Plants which are left in the Border where they were sown, must be covered with Mats in hard Frost; for though they will often live through the Winter in mild Seasons, yet hard Frost will always destroy them. The following Summer the Plants will flower, and if the Season proves warm and dry, they will ripen Seeds, and the Roots soon after decay.

The 7th and 12th Sorts are shrubby Plants, which are too tender to live through the Winter in the open Air in *England*, so the Plants must be removed into Shelter in the Autumn, but they only require Protection from hard Frost: These Plants may be placed with Myrtles, Oleanders, and other hardy Green-house Plants, where they often continue in flower great Part of Winter, and make a pretty Variety. These Sorts are easily propagated by Cuttings, which, if planted in *July* on a shady Border, and duly watered, will take Root in six or seven Weeks, when they should be taken up and planted in Pots filled with light loamy Earth, placing them in the Shade till they have taken Root, then

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then they may be exposed till October, at which Time they must be removed into Shelter.

The 11th Sort is annual, and rarely ripens Seeds here, so these must be procured from Abroad, and sowed as the 6th and 8th Sorts.

LINARIA. Tourn. Inst. R. H. 168. Tab. 76. *Antirrhinum*. Lin. Gen. Pl. 668. Toad-flax; in French, *Linaire*.

The Characters are,

The Flower hath a permanent Empalement of 1 Leaf, divided into 5 Parts almost to the Bottom. The Flower hath 1 Petal, and is of the ringent (or grinning) Kind, with an oblong swelling Tube, having 2 Lips above, with the Chaps shut. The upper Lip is bifid and reflexed on the Sides, the lower Lip is trifid and obtuse. It hath an oblong Nectarium, which is Awl-shaped and prominent behind, and 4 Stamina included in the upper Lip, 2 of which are shorter than the other, and a roundish Germen supporting a single Style, crowned by an obtuse Stigma. The Germen turns to a roundish obtuse Capsule with 2 Cells, filled with small Seeds.

The Species are,

1. **LINARIA foliis lanceolato-linearibus confertis, caule erecto, spicis terminalibus sessilibus.** Toad-flax with Spear-shaped linear Leaves growing in Clusters, and an upright Stalk terminated by Spikes of Flowers sitting close to the Stalk. *Linaria vulgaris, lutea, flore majore.* C. B. P. 212. Common yellow Toad-flax with a larger Flower.

2. **LINARIA foliis ternis ovatis.** Toad flax with oval Leaves placed by Threes. *Linaria triphylla minor lutea.* C. B. P. 212. Smaller three leaved yellow Toad-flax.

3. **LINARIA foliis quaternis lanceolatis, caule erecto ramofo, floribus pedunculatis.** Toad flax with Spear-shaped Leaves placed by Fours, an upright branching Stalk, and Flowers upon Foot Stalks. *Linaria latifolia folio Lusitanica.* H. R. Par. Broadest leaved Portugal Toad-flax.

4. **LINARIA foliis subquaternis linearibus, caule diffuso, floribus racemosis.** Toad-flax with linear Leaves placed by Fours on the lower Part of the Stalk, a diffused Stalk and branching Flowers. *Linaria quadrifolia supina.* C. B. P. 213. Low four leaved Toad-flax.

5. **LINARIA foliis lanceolato-linearibus sparsis, caule florifero erecto spicato.** Toad-flax with Spear-shaped linear Leaves, and the Flower Stalks erect and spiked. *Linaria purpurea major odorato.* C. P. P. 213. Greater sweet scented purple Toad-flax.

6. **LINARIA foliis linearibus confertis, caule erecto ramofo, floribus spicatis terminalibus.** Toad-flax with linear Leaves in Clusters, an erect branching Stalk, and Flowers in Spikes terminating the Stalks. *Linaria carulea, foliis brevioribus & angustioribus.* Raii Syn. 3. 282. Blue Toad-flax with shorter and narrower Leaves.

7. **LINARIA foliis inferioribus quinque linearibus.** Toad-flax with linear Leaves, placed by Fives at the lower Part of the Stalks. *Linaria Sicula-multicaulis, folio moluginis.* Bocca. Rar. 38. Sicilian Toad-flax with many Stalks and a Bedstraw Leaf.

8. **LINARIA foliis lanceolatis sparsis, inferioribus oppositis, nectaritis subulatis, floribus subsessilibus.** Toad-flax with Spear-shaped sparsed Leaves, which on the lower

Part of the Stalk are opposite, and Awl-shaped Nectaria and Flowers sitting almost close. *Linaria Hispanica procumbens, foliis uncialibus glaucis, flore flavescente pulchre striato, labiis nigro-purpureis.* Aët. Phil. N°. 412. Trailing Spanish Toad-flax with gray Leaves an Inch long, yellow Flowers beautifully striped, and dark purple Lips.

9. **LINARIA foliis linearibus confertis, caule nitido paniculato, pedunculis spicatis nudis.** Toad-flax with linear Leaves in Clusters, a shining paniculated Stalk, and Flowers in Spikes on naked Foot Stalks. *Linaria capillacea folio, odora.* C. B. P. 213. Sweet Toad-flax with Hair-like Leaves.

10. **LINARIA foliis lanceolatis birtis alternis, floribus spicatis, foliolo calycino supremo maximo.** Toad-flax with alternate hairy Spear-shaped Leaves, Flowers in Spikes, and the upper Leaf of the Empalement very large. *Linaria latifolia villosa, laciniis calycinis inæqualibus, flore majore pallido striato rictu aureo.* Horteg. Icon. Broad leaved hairy Toad-flax, whose Empalement is unequally cut, and a large pale striped Flower with a golden Snout.

11. **LINARIA foliis caulinis linearibus sparsis, radicalibus rotundis.** Toad-flax with linear Leaves placed sparsedly on the Stalks, and the lower Leaves round. *Linaria annua purpureo-violacea, calcaribus longis, foliis imis rotundioribus.* Vaill. Bot. Par. 118. Annual purple Violet Toad-flax, with long Spurs and rounder Leaves at Bottom.

12. **LINARIA foliis lineari-lanceolatis alternis, floribus racemosis, calycibus corollâ longioribus.** Toad-flax with linear Spear-shaped Leaves placed alternate, branching Flowers, and Empalements longer than the Petals. *Linaria annua, angustifolia, flosculis albis, longius caudatis.* Triump. 87. Narrow leaved annual Toad-flax, with white Flowers having long Tails.

13. **LINARIA foliis lanceolatis alternis, caule suffruticoso.** Toad-flax with Spear-shaped alternate Leaves, and an under Shrub Stalk. *Linaria latifolia Dalmatica, magno flore.* C. B. P. 212. Broad leaved Toad-flax of Dalmatia with a large Flower.

14. **LINARIA foliis lanceolatis acuminatis, paniculâ virgatâ.** Toad-flax with Spear-shaped acute pointed Leaves, and a Rod like Panicle. *Linaria genista folio glauco, flore luteo.* Par. Bat. App. 9. Toad-flax with a gray Dyer's Weed Leaf and a yellow Flower.

15. **LINARIA foliis ovatis alternis, caule flaccido procumbente.** Toad-flax with oval Leaves placed alternate, and a weak trailing Stalk. *Elatine folio subrotundo.* C. B. P. 253. Fluellin with a roundish Leaf.

16. **LINARIA foliis hastatis alternis, caule flaccido procumbente.** Toad-flax with Arrow-pointed Leaves placed alternate, and a weak trailing Stalk. *Elatine folio acuminato.* C. B. P. 253. Fluellin with an acute-pointed Leaf.

17. **LINARIA foliis cordatis quinquelobatis alternis glabris.** Toad-flax with Heart-shaped Leaves having five Lobes, which are alternate and smooth. *Linaria bederaceo folio glabro, seu Cymbalaria vulgaris.* Tourn. Inst. R. H. 169. Toad-flax with a smooth Ivy Leaf, or common Cymbalaria.

There are several other Species of this Genus which are

are of less Note, so are very rarely admitted into Gardens, for which reason I have not enumerated them here.

The 1st of these Plants grows in great Plenty on the Sides of dry Banks in most Parts of England, and is seldom cultivated in Gardens; for it is a very troublesome Plant to keep within Bounds, the Roots being very apt to spread under Ground, and rise at a great Distance from the Mother Plant, whereby it greatly injures whatever Plants stand near it. This is one of the Species mentioned in the Catalogue of Simples at the End of the College Dispensatory, to be used in Medicine.

This Sort hath a great Number of slender white Roots, which creep far on every Side, from which arise several erect branching Stalks, a Foot and a Half high, garnished with narrow gray Leaves in Clusters, and terminated by Spikes of yellow Flowers, sitting close to the Stalk. The Flowers are of one Petal, with a long Tube, to which is fixed a Spur or Heel; the fore Part has the Appearance of the Mouth of an Animal, the under Lip is hairy within, the Chaps are of a golden Colour, but the other Parts of the Flower of a pale yellow; these are succeeded by roundish Capsules with 2 Cells, filled with flat black Seeds. It flowers in July and August, when it makes a pretty Appearance, so that a few Plants might be allowed a Place in Gardens, were it not for their creeping Roots, which spread too much, and become troublesome Weeds.

There is an Ointment made of this Herb and Hog's Lard, which is accounted excellent for the Piles, being mixed with the Yolk of an Egg at the Time of using it. The Plant is reckoned to be aperitive and diuretick, opening Obstructions of the Liver and Spleen, helping the Dropsy and Jaundice.

The 2d Sort grows naturally about Valencia and in Sicily; this is an annual Plant, which rises with an upright branching Stalk near a Foot and a Half high, garnished with oval smooth gray Leaves, placed often by Threes, and sometimes by Pairs opposite at the Joints; the Flowers grow in short Spikes at the Top of the Stalks, they are shaped like those of the common Sort, but have not so long Tubes; they are yellow, with Saffron-coloured Chaps. This Sort flowers in July and August, and the Seeds ripen in Autumn.

There is a Variety of this whose Flowers have a purple Standard and Spur, which makes a pretty Appearance in a Garden; but it is generally supposed to be only an accidental Variety which has arisen from Seeds of the former, for which Reason I have not enumerated it here, though for many Years Culture of both Sorts, I have never yet perceived either of them alter. The Leaves of this are longer than those of the yellow, but in other Respects they do not differ.

These two are propagated by Seeds, which should be sown in the Spring, on the Borders of the Flower Garden where they are designed to remain, and when the Plants come up, they should be thinned where they are too close, and kept clean from Weeds, which is all the Culture they require. If some of the Seeds are sown in Autumn on a warm dry Border, the Plants will live thro' the Winter, unless the Frost proves very severe, and these autumnal Plants will grow larger, flower earlier, and from these good Seeds may always be obtained.

The 3d Sort rises with upright Stalks near 2 Feet high, which are garnished with Spear-shaped smooth Leaves, placed sometimes by Fours round the Stalk, and at others by Pairs opposite; the Stalks are terminated by large purple Flowers with long Spurs, standing on Foot Stalks. This flowers in July, but seldom ripens Seeds in England; it grows naturally in Portugal and Spain.

This Sort is tenderer than the last, so should be planted in a dry Soil and a warm Situation, otherwise the Plants are often destroyed in Winter. This Plant is propagated by Seeds as the former, and also by parting the Roots; but it is advisable always to keep some of these Plants in Pots, that they may be removed into Shelter in Winter, otherwise in hard Frosts they will be killed.

The 4th Sort grows naturally about Verona, from whence I received the Seeds. This is a perennial Plant, from whose Roots arise several diffused Stalks about 8 Inches long, garnished with narrow short gray Leaves, placed by Fours round the Stalks at Bottom, but upward they are opposite; the Stalks are terminated by short branching Tufts of pale yellow Flowers with golden Chaps. This Sort flowers in June, and sometimes the Seeds ripen here in the Autumn.

The 5th Sort grows naturally in the South of France, and in Italy; this hath a perennial Root sending out many Stalks, those of them which support the Flowers are erect, and near 3 Feet high, but the other Stalks are weaker and hang loosely on every Side the Plants; these are garnished with long narrow Spear-shaped Leaves placed sparsely, they are smooth, and of a gray Colour. The Stalks are terminated by long loose Spikes of blue Flowers, which appear in June, July, and August, and the Seeds ripen in Autumn, which, if permitted to scatter, will produce Plenty of young Plants without any further Care.

The 6th Sort grows naturally about Henley in Oxfordshire, and also in some Parts of Hertfordshire. This hath a perennial Root, from which arise several Stalks near 2 Feet high, which branch out on every Side, and are garnished with narrow Leaves growing in Clusters toward the Bottom, but upward they are sometimes by Pairs, and at others single. The Flowers are produced in loose Spikes at the End of the Stalks, they are of a pale blue Colour, and appear in June and July, and the Seeds ripen in Autumn, which, if permitted to scatter, will produce Plenty of Plants. When the Seeds happen to fall on old Walls, the Plants will grow there and continue longer than those planted in the Ground.

I received a Specimen of this Sort from Abroad, by the Title of *Linaria arvensis cerulea*. C. B. P.

The 7th Sort grows naturally in Sicily; this is an annual Plant, from whose Root arise many Stalks which are very slender and about a Foot high, which on their lower Part are garnished with 5 very narrow Leaves at each Joint, but upward they are sometimes by Pairs, and others they are single. The Stalks are divided into many small Branches, which are garnished with small yellow Flowers, coming out single at Distances from each other; these are shaped like those of the other Species.

Species. The Flowers appear in *July*, and the Seeds ripen in Autumn. There are two Varieties of this, one with a deep yellow, and the other a Sulphur-coloured Flower.

This is propagated by Seeds as the 2d Sort, or if the Seeds are permitted to scatter, the Plants will come up without Care, and if they are kept clean from Weeds, will produce their Flowers early in the Summer.

The 8th Sort grows naturally on the Rocks about *Gibraltar*, from whence the late Sir *Charles Wager* brought the Seeds, which were sown in his curious Garden at *Parsons Green* near *Fulham*, where they succeeded, and from thence many curious Gardens were furnished with the Plants. This has a perennial Root, from which come out many slender succulent Stalks about 8 or 9 Inches long, which are weak and hang down on every Side the Root; they are garnished with short narrow Spear-shaped Leaves of a gray Colour and succulent, standing without Order; they are about 1 Inch long, and a fifth Part of an Inch broad. The Flowers are produced at the End of the Stalks in small Bunches, they are yellow, marked with purple Stripes, and the Chaps of the Flower, as also the Spur, are of a dark purple Colour; the Flowers sit close upon the Top of the Stalk. The Flowers appear in *June* and *July*, but do not produce Seeds in *England*.

This Plant is easily propagated by parting the Roots, or planting Cuttings in any of the Summer Months, which, if watered and shaded, will soon take Root, and may afterwards be planted in Pots filled with fresh light undunged Earth, in which they will succeed much better than in a richer Soil; for if they are planted in a fine rich Earth, it causes them to grow very fast for a short Time, but they seldom fail to rot soon after. These must be removed into Shelter in Winter, where they must have as much free Air as possible in mild Weather, and be only protected from severe Cold; so that if the Pots are placed under a hot Bed Frame, it will be better than to place them in a Green-house, where they are apt to draw too much, which will cause them to decay.

The 9th Sort grows naturally in *Wales*, particularly near *Penryn*. This hath a perennial Root, from which arise many branching Stalks near 2 Feet high, garnished with very narrow Leaves growing in Clusters, which are of a grayish Colour. The Flowers are produced in loose Spikes at the End of the Branches, they are of a pale blue Colour, and smell sweet. These appear in *June*, and there is often a Succession of Flowers on the Plants till Winter. The Seeds ripen in Autumn, which, if permitted to scatter, will furnish a Supply of young Plants without any further Care. If the Seeds of this Sort get on a Wall, the Plants will come up and continue there much longer than when they are planted in the Ground.

The 10th Sort grows naturally in *Spain*; the Seeds of it were sent me by Dr. *Hortega* from *Madrid*. This is an annual Plant, which rises with a single Stalk about a Foot and a Half high, garnished with hairy Spear-shaped Leaves, sitting close to the Stalk; these are placed alternate. The Flowers grow on the Top of the Stalks in loose Spikes; they are of a pale yellow Colour with a few deep Stripes, and the Chaps are of a Gold Colour;

the upper Segment of the Empalement is much larger than the lower. The Flowers of this Sort are as large as those of the common Sort, they appear in *July*, and the Seeds ripen in Autumn.

The Seeds of this Sort should be sown in the Spring on a Border of light Earth where the Plants are designed to remain, and when the Plants come up, they must be treated as those of the second Sort.

The 11th Sort grows naturally in *France*; this is an annual Plant with round Leaves at the Root, the Stalks are slender, branching, and rise a Foot high, garnished with very narrow Leaves at each Joint. The Flowers are produced in loose Spikes at the End of the Branches, they are of a bright blue Colour, and appear in *July*; the Seeds ripen in Autumn, at which Time they should be sown, for those which are sown in the Spring, frequently lie in the Ground till the Spring following, before the Plants appear. When the Plants come up, they must be thinned where they are too close, and kept clean from Weeds, which is all the Culture they require.

The 12th Sort grows naturally in *Sicily*; this is an annual Plant, which rises with a branching Stalk 2 Feet high, garnished with very narrow Spear-shaped Leaves placed alternately. The Flowers are produced singly all along the Branches the greatest Part of their Length; they are small, white, and have very long Tails or Spurs. This flowers in *July*, and the Seeds ripen in Autumn. If the Seeds of this Sort are permitted to scatter, the Plants will come up without Care, and require no other Culture but to keep them clean from Weeds.

The 13th Sort grows naturally in *Crete*, and also in *Dalmatia*. This rises with a strong ligneous Stalk 3 Feet high, garnished with smooth Spear-shaped Leaves placed alternate, sitting close to the Stalk. The Flowers are produced at the End of the Branches in short loose Spikes, they are of a deep yellow Colour, and much larger than those of the common Sort, standing on short Foot Stalks. This Sort flowers in *July*, but the Seeds very rarely ripen in *England*, so that the Plants are seldom seen in many Gardens here. It is propagated by Seeds, which should be sown early in the Spring, on a Border of light Earth; and when the Plants come up and are fit to remove, some of them should be planted in Pots filled with light sandy Earth, and placed in the Shade till they have taken new Root, then they may be exposed with other hardy exotick Plants till the End of *October*, when they should be put into a common hot Bed Frame, where they may be protected from hard Frost; but in mild Weather, they should enjoy the free Air, for these Plants only require to be protected from hard Frost, for in mild Winters they will live abroad without Shelter, if they are on a dry Soil; therefore a Part of the Plants may be planted on a warm Border of poor sandy Soil, where they will live through our common Winters very well; and those Plants which grow in Rubbish and are stunted, will endure much more Cold than the others.

The 14th Sort grows naturally in *Siberia*; this is a biennial Plant, which rises with an upright branching Stalk, from 3 to 4 Feet high, garnished with Spear-shaped Leaves, ending in acute Points, of a grayish Colour; these are placed alternate. The Flowers are produced at the End of the Branches, in loose Panicles; they

they are of a bright yellow Colour, and shaped like those of the other Sorts. This flowers in June and July, and the Seeds ripen in Autumn, which, if permitted to scatter, the Plants will come up the following Spring, and require no other Care but to thin them where they are too close, and keep them clear from Weeds. The Plants always decay after they have ripened their Seeds, therefore there should be a Supply of young ones annually.

The 15th Sort grows naturally among Wheat and Rye, in several Parts of England. It is an annual Plant with weak trailing Stalks, which spread on the Ground, and are a Foot and a Half long; they are hairy, and garnished with oval Leaves, placed alternately, from the setting on of the Foot Stalks of the Leaves, at each Joint comes out one Flower, shaped like those of the other Species. The upper Lip is yellow, and the under is purple; these appear in June and July, and the Seeds ripen in Autumn, which should be then sown, or permitted to scatter, for if it is sown in the Spring, it seldom grows the same Year, for it is rarely seen among Spring sown Corn, in those Lands where it commonly grows.

This Plant is used in Medicine, and is esteemed vulnerary, and good for old cancerous Sores and Ulcers; it is accounted good for Hæmorrhages of all Sorts.

The 16th Sort differs from the 15th, in nothing but the Shape of the Leaves, which in this are shaped like the Point of an Arrow, and those of the other are oval; this is more commonly found in England than the other.

The 17th Sort was brought from Italy to England, where it now grows in as great Plenty in the Neighbourhood of London, as if it was in its native Country, growing from the Joints of Walls, wherever the Seeds happen to scatter. It is a perennial Plant, which will thrive in any Soil or Situation, so that where it is once established, it will be difficult to root out, for the Seeds will get into any Joints of Walls, or the decayed Parts of Pales, as also in the Hollow of Trees, where they grow and propagate plentifully, for the Stalks put out Roots at their Joints, so spread themselves to a great Distance. It flowers all the Summer, and the Seeds ripen in Succession. It is never cultivated in Gardens, but is supposed to be an excellent Wound Herb.

LINGUA CERVINA. Hart's Tongue.

These Plants commonly grow out from the Joints of old Walls and Buildings, where they are moist and shady, and also on shady moist Banks, but are seldom cultivated in Gardens. There is a very great Variety of these Plants, both in the East and West-Indies, but there are very few Species of them in Europe; all the hardy Sorts may be propagated by parting their Roots, and should have a moist Soil and shady Situation.

LINUM. Tourn. Inst. R. H. 339. Tab. 176. Lin. Gen. Pl. 349. Flax; in French, Lin.

The Characters are,

The Flower hath a permanent Empalement, composed of 5 small Spear-shaped acute Leaves. The Flower is composed of 5 large oblong Petals, which are narrow at their Base, but broader upward, and spread open. It hath 5 Awl-shaped erect Stamina, terminated by Arrow-shaped Summits. In the Center is situated an oval Germen, sup-

porting 5 slender Styles, crowned by reflexed Stigmas. The Germen turns to a globular Capsule with 10 Cells, opening with 5 Valves, in each Cell is lodged 1 oval, plain, smooth Seed, with an acute Point.

The Species are,

1. LINUM calycibus capsulisque mucronatis, petalis crenatis, foliis lanceolatis alternis, caule subfolitario. Lin. Sp. Pl. 277. Flax with Empalements, and Capsules ending in acute Points, crenated Petals to the Flower, Spear-shaped alternate Leaves, and the Stalks commonly single. Linum sativum. C. B. P. 214. Manured Flax.

2. LINUM calycibus capsulisque mucronatis, petalis emarginatis, foliis lanceolatis alternis, caule ramoso. Flax with sharp pointed Empalements and Capsules; the Petals of the Flower indented, Spear-shaped alternate Leaves, and a branching Stalk. Linum sativum bumilius, flore majore. Bobart. Boerb. Ind. alt. 1. p. 284. Low manured Flax with a larger Flower.

3. LINUM calycibus acuminatis, foliis lanceolatis sparsis strictis scabris acuminatis, caule tereti basi ramoso. Lin. Sp. Pl. 278. Flax with acute-pointed Empalements, rough Spear-shaped Leaves placed without Order, ending in acute Points, and a taper Stalk, branching at the Base. Linum sylvestre, ceruleum, folio acuto. C. B. P. 107. Wild blue Flax with an acute Leaf.

4. LINUM calycibus acuminatis, foliis sparsis linearibus setaceis retrorsum scabris. Lin. Sp. Pl. 278. Flax with acute-pointed Empalements, and narrow bristly Leaves placed without Order, which are rough on their Outside. Linum sylvestre angustifolium, floribus dilute purpurascens vel carneis. C. B. P. 214. Narrow leaved wild Flax with a pale purplish, or Flesh-coloured Flower.

5. LINUM calycibus capsulisque acuminatis, caule subnudo scabro, foliis acuminatis. Flax with acute-pointed Empalements and Capsules, an almost naked rough Stalk, and acute pointed Leaves. Linum perenne, majus, ceruleum, capitulo majore. Mor. Hist. 2. 573. Greater blue perennial Flax with larger Heads.

6. LINUM calycibus capsulisque obtusis, foliis alternis lanceolatis acutis, caulibus ramosissimis. Plat. 166. Flax with obtuse Empalements and Capsules, alternate Spear-shaped acute Leaves, and very branching Stalks, commonly called Siberian perennial Flax.

7. LINUM calycibus acutis, foliis linearilanceolatis sparsis, caule paniculato. Flax with acute Empalements, linear Spear-shaped Leaves placed without Order, and a paniculated Stalk.

8. LINUM calycibus patulis acuminatis, foliis linearibus alternis, caule ramoso. Flax with spreading acute-pointed Empalements, linear alternate Leaves, and a branching Stalk.

9. LINUM calycibus hirsutis acuminatis sessilibus alternis, caule corymboso. Lin. Sp. Pl. 277. Flax with hairy acute-pointed Empalements, placed alternate, and close to the Stalks, which have a Corymbus. Linum sylvestre, latifolium, hirsutum ceruleum. C. B. P. 339. Broad leaved hairy wild Flax with a blue Flower.

10. LINUM calycibus foliisque lanceolatis strictis mucronatis, margine scabris. Lin. Sp. Pl. 279. Flax with Spear-shaped Leaves and Empalements, which end in acute Points, and have rough Edges. Passerina Lobelii. J. B. 3. p. 454.

11. *LINUM calycibus acutis, petalis integris, foliis inferioribus linearibus fasciculatis, superioribus alternis, caule suffruticoso.* Flax with acute Empalements, entire Petals to the Flower, linear under Leaves growing in Clusters, the upper ones alternate, and a shrubby Stalk. *Linum sylvestre acutis foliis fruticans.* Barrel. Icon. 1008. Wild Flax with a shrubby Stalk and acute Leaves.

12. *LINUM foliis lanceolatis alternis, floribus alternis sessilibus, caule simpliciter.* Flax with Spear-shaped Leaves placed alternate, Flowers growing alternate, and close to the Stalks, which are single. *Linum luteum ad singula genicula floridum.* C. B. P. 214. Yellow Flax with single Flowers growing from the Joints.

13. *LINUM foliis oppositis ovato-lanceolatis, caule dichotomo, corollis acutis.* Hort. Cliff. 372. Flax with oval Spear-shaped Leaves placed opposite, a Stalk divided by Pairs, and acute Petals to the Flower. *Linum pratense, flosculis exiguis.* C. B. P. 214. Meadow Flax with small Flowers, commonly called Mountain Flax.

14. *LINUM calycibus ovatis acutis muticis, foliis lanceolatis inferioribus oppositis.* Lin. Sp. Pl. 280. Flax with oval, acute, chaffy Empalements, and Spear-shaped Leaves, the lower of which grow opposite. *Linum maritimum luteum.* C. B. P. 214. Yellow maritime Flax.

The 1st Sort is the Flax which is cultivated in most Parts of Europe, but particularly in the northern Parts; this is an annual Plant, which usually rises with a slender unbranched Stalk, a Foot and a Half high, garnished with narrow Spear-shaped Leaves, placed alternate, ending in acute Points, and are of a gray Colour. The Flowers are produced on the Top of the Stalks, each Stalk sustaining 4 or 5 blue Flowers, composed of 5 Petals, narrow at their Base, but broad at the Top, where they are slightly crenated. The Empalement of the Flower is cut into 5 Parts, which end in acute Points. The Flowers appear in June, and are succeeded by roundish Capsules, which have 10 Cells, opening with 5 Valves, which are terminated by acute Points; each Cell contains 1 smooth flattish Seed, ending in a Point, of a brownish Colour. The Seeds ripen in September, and the Plants soon after perish.

When this Plant is cultivated in the Fields after the usual Method, it seldom rises higher than is before-mentioned, nor do the Stalks branch out, but when they are allowed more Room, they will rise between 2 and 3 Feet high, and put out 2 or 3 Side Branches toward the Top, especially if the Soil is pretty good where it is sown.

The 2d Sort differs from the first, in having stronger and shorter Stalks branching out much more. The Leaves are broader, the Flowers are larger; the Petals are indented at their Extremities. The Seed Vessels are also much larger, and the Foot Stalks are longer; these Differences are lasting, for I have cultivated this, and the common Flax on the same Ground upward of 30 Years, and have never found either of them alter.

The 3d Sort grows naturally in the South of France, in Italy, and Spain; this rises from a Foot, to 18 Inches high, branching out almost to the Bottom, into many long slender Branches, garnished with narrow Spear-shaped acute-pointed Leaves, placed without Order; these are rough to the Touch. The Flowers are produced at the End of the Branches, almost in Form of an Umbel; they are smaller than those of the manured

Sort, and are of a paler blue Colour. The Seed Vessels are much smaller, and not so round. It flowers and seeds about the same Time as the former.

The 4th Sort grows naturally about Vienna and in Hungary; this Sort seldom rises more than a Foot high, with a slender Stalk, which divides into 3 or 4 slender naked Foot Stalks at the Top, each sustaining 2 or 3 Flowers, of a pale blue Colour. The Stalks are garnished with short, narrow, bristly Leaves, standing erect, rough on their Outside. This flowers and seeds about the same Time as the former, and the Plant soon after decays.

There are two or three Varieties of this, which differ in the Colour of their Flowers, but in other Respects are the same.

The 5th Sort grows naturally in some Parts of England; this hath a perennial Root, from which arise 3 or 4 inclining Stalks, which are garnished with a few short narrow Leaves toward their Base, but upward have scarce any. The Flowers are produced at the End of the Stalks, sitting very close; they are of a blue Colour, and about the Size of those of the manured Kind, and are succeeded by pretty large round Seed Vessels, ending in acute Points. This flowers about the same Time as the common Flax, but the Roots will continue 3 or 4 Years.

The 6th Sort grows naturally in Siberia; it hath a perennial Root, from which arise several strong Stalks, in Number proportional to the Size of the Root, and in Height according to the Goodness of the Soil where it grows, for in rich moist Ground, they will rise near 5 Feet high, but in middling Ground about 3 Feet; these divide into several Branches upward, and are garnished with narrow Spear-shaped Leaves, placed alternate; they are not much more than an Inch long, and an Eighth of an Inch broad, of a deep green, ending in acute Points. The Flowers are produced at the End of the Branches, forming a Kind of Umbel; the Stalks rising nearly of the same Height. The Flowers are large, and of a fine blue Colour; these appear in June, and are succeeded by obtuse Seed Vessels, which ripen in September.

The 7th Sort grows naturally in Spain, from whence I received the Seeds; this hath a perennial Root, from which come out several trailing Stalks, closely garnished with Leaves; these never rise much from the Ground, but between these come out upright Stalks, which rise upward of 2 Feet high, garnished with pretty long narrow Spear-shaped Leaves placed without Order. The Flowers grow in a Sort of Panicle toward the upper Part of the Branches; they are about the Size of those of the common Sort, and are of the same Colour. It flowers and ripens its Seeds about the same Time, and the Roots continue several Years.

The 8th Sort I received from Ischia; this hath a perennial Root, from which arise 2 or 3 Stalks, which divide into several Branches, at about 6 Inches from the Root, these divide again into smaller toward the Top; they are garnished with short, narrow, acutely pointed Leaves, placed alternately. The Flowers come out from the Side of the Branches, standing on long Foot Stalks. The Empalement of the Flower is composed of 5 broadish Leaves ending in acute Points, which spread open; the Flowers are of the same Size

and Colour as the common Flax, and appear at the same Season. The Seeds ripen in Autumn, and the Roots abide several Years.

The 9th Sort grows naturally in *Hungary* and *Austria*; this hath a perennial Root, from which arise several Stalks near 2 Feet high, which are thick, firm, and hairy, dividing at the Top into several Branches, and garnished with broader Leaves than the other Species, which are hairy. The Flowers grow along the Stalks alternately, they are large, and of a deep blue Colour, appearing at the same Time with the common Sort, and the Seeds ripen in Autumn.

The 10th Sort grows naturally in *Germany* and the South of *France*, among the Corn. This is an annual Plant, rising with an upright Stalk near a Foot and a Half high, garnished with Spear-shaped, acute-pointed Leaves, rough on their Edges; they are about the same Length of those of the common Flax, but a little broader, placed alternately. The Stalks divide toward the Top into several Branches, each sustaining 2 or 3 yellow Flowers, sitting in Spear-shaped, acute-pointed Empalements. These appear in *July*, but unless the Autumn proves favourable, the Seeds never ripen in *England*.

The 11th Sort grows naturally in *Spain*, the Seeds of it were sent me from *Madrid* by Dr. *Hortega*. This hath a shrubby Stalk which rises a Foot high, sending out several Branches garnished with very narrow Leaves coming out in Clusters, but the flowering Branches are garnished with broader and longer Leaves placed alternately at every Joint. The Flowers are produced at the End of the Branches, standing erect on long slender Foot Stalks; they have acute-pointed Empalements. The Petals of the Flower are large, entire, and white, but before the Flowers open, they are of a pale yellow Colour. These Flowers appear in *July*, but unless the Autumn proves favourable, the Seeds do not ripen in *England*. The Flower Stalks of this Sort decay in the Autumn, but the lower shrubby Stalk continues with the other Branches all the Year.

The 12th Sort grows naturally on the *Alps*; this hath a perennial Root, from which arise 2 or 3 slender stiff Stalks, which divide at the Top into 2 or 3 Parts, and are garnished with Spear-shaped Leaves placed alternately. The Flowers come out singly at the Joints, and sit close to the Stalks; their Empalements are cut into 5 slender Segments, which are longer than the Petals of the Flower. The Flowers are yellow, and appear about the same Time with the common Sort, and the Seeds ripen in the Autumn.

The 13th Sort grows common in many Parts of *England*, on dry barren Hills. It is commonly called *Linum catharticum*, purging Flax, and also Mountain Flax. This rises with several branching slender Stalks about 7 or 8 Inches high, garnished with small, oval, Spear-shaped Leaves placed opposite. The Flowers are small and white, standing on pretty long Foot Stalks, which come out from the Side of the Branches, and also where they are divided. They appear in *July*, and are succeeded by small round Capules, containing small flat Seeds which ripen in Autumn. This is one of those Plants which refuses Culture.

I have frequently sown the Seeds both in Autumn and Spring, but could never get up any of the Plants, and others who have made the Trial have found the same.

The 14th Sort grows naturally about *Montpelier*, and in some Parts of *Italy* near the Sea. This rises with upright Stalks near 2 Feet high, the lower Parts of which are garnished with Spear-shaped Leaves placed opposite, but on the upper Part they are alternate. The Stalks divide upward into several Branches, the Tops of which are garnished with yellow Flowers about the Size of those of common Flax, which hang downward; these are succeeded by small oval Capules, containing smaller Seeds than those of the common Flax. The Flowers appear in *July*, and the Seeds ripen in Autumn.

There are several other Species of Flax which grow wild in the different Parts of *Europe*, but those here enumerated are all I have seen growing in *England*.

The 1st Sort is that which is cultivated for Use in divers Parts of *Europe*, and is reckoned an excellent Commodity; the right tilling and ordering of which, is esteemed a good Piece of Husbandry.

This should be cultivated on a rich Soil, that has not been ploughed for several Years, upon which Flax always makes the best Improvement; but as it draws greatly from the Soil, it should not be sown 2 Years together on the same Ground.

This Ground should be as clean from Weeds as possible; in order to have it so, it should be fallowed two Winters and one Summer, observing to harrow the Ground well between each ploughing, particularly in Summer, to destroy the young Weeds soon after they appear, that the smallest of them may not stand to ripen their Seed; this will also break the Clods, and separate their Parts so, that they will fall to Pieces on being stirred. If the Land should require Dung, that should not be laid on it till the last ploughing, when it must be buried in the Ground; but this Dung should be such as is clear from the Seeds of Weeds, which it always will be where there is Care taken to keep the Dunghills clean from Weeds, and the Places near it; for supposing there should be any Seeds at first among the Dung, yet when it is laid in a Heap and well fermented, that will destroy the Seeds; but there are few Persons who are careful to keep their Dunghills, and the Places near them, clean from Weeds; and the Seeds of these falling on the Dung, are carried upon the Land, from whence sprung that vulgar Error, that Dung produces Weeds, which it never can do, if there is not the Seeds mixed with it. Just before the Season for sowing the Flax Seed, the Land must be well ploughed, laid flat and even, upon which the Seeds should be sown about the latter End of *March*, when the Weather is mild and warm.

The common Way is to sow the Seed in Broad-cast, and to allow from 2 to 3 Bushels of Seeds to one Acre of Land; but from many repeated Trials, I have found it is a much better Method to sow the Seeds in Drills, at about 10 Inches Distance from each other, by which half the Quantity of Seed which is usually sown, will produce a greater Crop; and when the Flax is thus sown,

sown, the Ground may be easily hoed to destroy the Weeds, which, if twice repeated in dry Weather, will keep the Ground clean till the Flax is ripe: This may be performed at half the Expence which the Hand weeding will cost, and will not tread down the Plants, nor harden the Ground, which by the other Method is always done; and it is absolutely necessary to keep the Flax clean from Weeds, otherwise they will overbear and spoil the Crop.

There are some People who recommend the feeding of Sheep with Flax, when it is a good Height; and say, they will eat away the Weeds and Grass, and do the Flax good; and if they should lie in it, and beat it down or flatten it, it will rise again the next Rain: But this is a very wrong Practice, for if the Sheep gnaw or eat the Flax, the Plants will shoot up very weak, and never come to half the Size they would have done, if not cropped; and as to the Sheep destroying the Weeds, they never are so nice Distinguishers, for if they like the Crop better than the Weeds, they will devour that and leave the Weeds untouched.

Toward the latter End of *August* the Flax will begin to ripen, when you must be careful that it grow not over ripe; therefore you must pull it up as soon as the Heads begin to change brown and hang downwards, otherwise the Seeds will soon scatter and be lost, so that the Pluckers must be nimble, and tie it up in Handfuls, setting them upright till they be perfectly dry, and then house them. If the Flax be pulled when it first begins to flower, it will be whiter than if it stand till the Seed is ripe, but then the Seed will be lost; but the Thread will be stronger when the Flax is left till the Seed is ripe, provided it does not stand too long, but the Colour of it will not be so good.

The *Siberian* perennial Flax has been made Trial of, and answers very well for making common strong Linnen, but the Thread spun from this is not so fine or white as that which is produced from the common Sort; but as the Roots of this Sort will continue many Years, there will be a great Saving in the Culture, as it will require no other Care but to keep it constantly clean from Weeds; which cannot be well done, unless the Seeds are sown in Rows, that the Ground may be constantly kept hoed to destroy the Weeds when young, for if they are suffered to grow large, it will be difficult to get the Ground clean, and they will weaken the Roots. This Sort must have the Stalks cut off close to the Ground when ripe, and tied up in small Bundles, managing them afterward as the common Sort.

The 8th Sort which I received from *Istria*, produced the finest Thread, and this grows taller than the common Flax, and having a perennial Root, it may be worthy of Trial to see how it will thrive in the open Fields, for in Gardens it lives through the Winter without receiving the least Injury from the Frost, several of the Roots having survived 7 or 8 Winters in the *Chelsea* Garden; and in order to make Trial of its Goodness, I gave a Parcel of the Stalks of this, as also of the *Spanish* and *Siberian* perennial Sorts, to a Person who is well skilled in watering, breaking, and dressing Flax, who prepared them, and assured me, that the *Istrian* Flax was by much the finest of the three, and equal in Goodness to any he had seen.

There is annually great Quantities of the Seed of Flax imported into *Scotland* and *Ireland*, from the *East Country*, particularly from *Riga*, to the Amount of many thousand Pounds Sterling, *per Ann.* which might be saved to the Publick, by encouraging the Growth of Flax in the northern Colonies of *America*, where the Summers are warmer than in *England*, so that the Seeds would ripen perfectly there, and the Change of Seeds from thence would be greater than that from *Riga*, but it should be confined to the most northern Parts of *America*, for such Seeds as are saved in the warmer Parts, will not succeed well here, as I have experienced in many other Kinds of Plants, whose Seeds I have sent to *Carolina*, where they have grown two or three Years, after which some of the Seeds have been sent me back, which I have always found to be much longer in growing to Perfection, than before.

The other Sorts which are here mentioned, are preserved in Gardens for the Sake of Variety, but none of them are used, except the Mountain Flax, which is esteemed a good Purger in dropical Disorders, and has of late Years been often prescribed.

They are all of them propagated by Seeds, which may be sown in the Spring, in the Places where they are to remain, and will require no other Culture, but to keep the Plants clean from Weeds. The annual Sorts will flower and perfect their Seeds the same Year, but the Roots of the perennial Sorts will continue several Years, putting out fresh Stalks every Spring. The shrubby Sorts will live through the Winter in the open Air, provided it is in a dry Soil, and a warm Situation, but these rarely produce Seeds in *England*.

The Method of Watering, Piling, Breaking, &c. being a particular Business, and foreign to my Design, I shall not pretend to give any Directions about it in this Place.

This is a Plant of the greatest Use, in several of the most essential Parts of Life; from the Seeds an expressed Oil is drawn, which is of great Use in Medicine, Painting, &c. from the Bark of the Stalks is made Linnen, and from the Rags of Linnen is made Paper; so that this Plant may be esteemed as one of the most valuable and necessary in many of the principal Conveniences of Life.

LINUM UMBILICATUM. See *Cynoglossum*.

LIPPIA. *Houft. Gen. Nov. Lin. Gen. Pl.* 699.

This Plant was so named by the late Dr. *William Houftoun*, who discovered it at *La Vera Cruz*, in Honour of Dr. *Augustus Lippi*, who travelled to *Egypt*, and discovered many new Plants.

The Characters are,

The Empalement of the Flower is permanent, roundish, and compressed. The Flower hath 1 Petal, of the ringent Kind; the upper Lip is divided into 2 Parts, which are reflexed; the under Lip is smaller, and cut into 2 roundish Segments. It hath 4 short Stamina, 2 of which are a little longer than the other, terminated by single Summits, and an oval Germen supporting a slender Style the Length of the Stamina, crowned by an indented Stigma. The Germen afterward turns to a compressed Capsule with 1 Cell, opening with 2 Valves, which appear like the Scales of the Empalement, inclosing 2 Seeds which are joined.

We know but one Species of this Plant at present, viz.

LIPPIA arborescens, foliis conjugatis oblongis, capitulis squamosis & rotundis. Houst. Tree Lippia, with oblong Leaves growing by Pairs, and having round scaly Heads.

This Plant, in the Country of its native Growth, commonly rises to 16 or 18 Feet high, with a rough Bark; the Branches come out by Pairs opposite, as do also the Leaves, which are oblong, pointed, and a little sawed on their Edges. From the Wings of the Leaves come out the Foot Stalks, which sustain many round scaly Heads, about the Size of a large gray Pea, in which are many small yellow Flowers appearing between the Scales, which are succeeded by the Seed Vessels.

The Seeds of this Plant were sent to several curious Gardens in Europe, where some of the Plants have been raised; but as the Country from whence it came is very warm, the Plants will not thrive in this Climate, unless they are preserved in a warm Stove. These may be treated as other shrubby Plants, from warm Countries; which is, to keep them always in the Stove, plunged in the Bark Bed, observing to give them a large Share of Air in warm Weather, and frequently refresh them with Water; but in Winter they must be watered more sparingly, and be kept in a moderate Degree of Warmth, otherwise they will not live through the Winter, especially while young; but when they have acquired Strength, they may be preserved with a less Share of Warmth.

As the Plants advance in their Growth, they should be shifted into larger Pots, but this should not be too often repeated; for if they are removed into new Pots every Spring, it will be as often as they require; so that when these, and many other exotick Plants, are too often removed, they do not thrive so well as when they are permitted to fill the Pots with their Roots. The best Time to shift these Plants is in April, at which Time the Tan of the hot Bed should be stirred, and fresh Tan mixed with it, to increase the Heat. The Earth in which these Plants are placed, should be fresh and light, but not too rich.

LIQUIDAMBER. *Mitch. Gen. 12. Lin. Gen. Pl. 955.* Liquidamber, sweet Gum, or Storax Tree.

The Characters are,

It hath male and female Flowers on the same Tree; the male Flowers are numerous, disposed in long loose conical Katkins; these have four-leaved Empalements, but no Petals. They have a great Number of short Stamina joined in one Body, which are convex on one Side but plain on the other, terminated by erect Twin Summits with 4 Furrows. The female Flowers are situated at the Base of the male Spike, collected in a Globe; these have a double Empalement like that of the male, and each of them has a Bell-shaped angular distinct Empalement with many Protuberances. They have no Petals, but an oblong Germen fastened to the Empalement, supporting 2 Awl-shaped Styles, to which is also fixed the recurved Stigmas which are hairy, and as long as the Styles. The Empalement afterward turns to a roundish Capsule of 1 Cell, with 2 Valves at the Top, which are acute and collected in a ligneous Globe, containing many oblong acute-pointed Seeds.

The Species are,

1. **LIQUIDAMBER foliis quinquelobatis serratis.** Liquidamber with sawed Leaves having 5 Lobes. *Styrax aceris folio. Raii. Hist. 1681.* Maple-leaved Storax Tree.

2. **LIQUIDAMBER foliis quinquelobatis, sinuatis obtusis.** Liquidamber with Leaves having 5 Lobes, which are sinuated and obtuse.

The 1st Sort has by some Writers been ranged with the Maple, but on no other Account, except from the Similitude of the Leaves; for in Flower and Fruit it is very different from the Maple, and most other Genera: Nor has it any Affinity to the Storax Tree, but the Gum which issues from this Tree being transparent, and having a great Fragrancy, has by some ignorant Persons been taken for that.

It grows plentifully in Virginia, and several other Parts of North America, where it rises with a strait naked Stem 15 or 16 Feet high, and afterward branches out regularly to the Height of 40 Feet or upward, forming a pyramidal Head. The Leaves are angular, and shaped somewhat like those of the lesser Maple, having 5 Lobes, but are of a dark green Colour, and their upper Surfaces shining, a strong sweet glutinous Substance exudes through the Pores of the Leaves in warm Weather, which renders them clammy to the Touch.

The Flowers are generally produced early in the Spring of the Year, before the Leaves are expanded, which are of a Saffron-Colour, and grow in Spikes from the Extremity of the Branches; after these are past, the Fruit swells to the Size of a Walnut, being perfectly round, having many Protuberances, each having a small Hole and a short Tail, which extends half an Inch.

The Planks of this Tree being beautifully veined, are often used in America for wainscoting Rooms; but it requires a long Time to season the Boards, otherwise they are apt to shrink.

In Europe this Tree is cultivated in the Gardens of the Curious, for Variety; it is hardy enough to endure the severest Cold of this Country in the open Air, and there are some of them upward of 20 Feet high, though I have not heard of any of them which has produced Fruit.

This is commonly propagated by Layers in England, but those Plants which are raised from Seeds, grow to be much fairer Trees.

The Seeds of this Tree commonly remain in the Ground a whole Year before the Plants come up, so that the surest Way to raise them is, to sow the Seeds in Boxes or Pots of light Earth; which may be placed in a shady Situation during the first Summer, and in Autumn they may be removed where they may have more Sun; but if the Winter should prove severe, it will be proper to cover them with Peas Haulm, or other light Covering, which should be taken off constantly in mild Weather. In the following Spring, if these Boxes or Pots be placed on a moderate hot Bed, it will cause the Seeds to come up early, so that the Plants will have Time to get Strength before Winter; but during the first and second Winters, it will be proper to screen the Plants

Plants from severe Frost, but afterward they will bear the Cold very well.

The Seeds of the second Sort were sent by Mr. Peyssonel from the *Levant*, to the French King's Garden at *Marli*, a few of which were sent me by Mr. Richard, the King's Gardener, which succeeded in the *Chelsea* Garden. The Leaves of this Sort differ from those of the first, in having their Lobes shorter and sinuated on their Borders; they end in blunt Points, and are not serrated; but as I have not seen the Fruit of this, I do not know how it differs from the other.

LIRIODENDRUM. See Tulipifera.

LITHOSPERMUM. *Tourn. Inst. R. H.* 137. *Tab.* 55. *Lin. Gen. Pl.* 166. Gromwell, Gromill, or Gray-mill; in French, *Gremil*.

The Characters are,

The Flower hath an oblong, erect, acute-pointed, permanent Empalement, cut into 5 Parts. It hath 1 Petal with a cylindrical Tube the Length of the Empalement, divided into 5 obtuse Points at the Brim, which are erect, the Chaps are perforated. It hath 5 short Stamina terminated by oblong Summits, which are shut up in the Chaps of the Petal. It hath 4 Germina with a slender Style the Length of the Tube, crowned by a bifid obtuse Stigma. The Germina turns to so many oval, hard, smooth, acute-pointed Seeds, sitting in the spreading Empalement.

The Species are,

1. LITHOSPERMUM *feminibus levibus, corollis calycem vix superantibus, foliis lanceolatis.* *Hort. Cliff.* 46. Gromwell with smooth Seeds, the Petal of the Flower scarce longer than the Empalement, and Spear-shaped Leaves. *Lithospermum majus erectum.* *C. B. P.* 258. Greater upright Gromwell.

2. LITHOSPERMUM *feminibus rugosis, corollis vix calycem superantibus.* *Hort. Cliff.* 46. Gromwell with rough Seeds, whose Petals are scarce longer than the Empalement. *Lithospermum arvense, radice rubra.* *C. B. P.* 258. Field Gromwell with a red Root.

3. LITHOSPERMUM *feminibus levibus, corollis calycem multoties superantibus.* *Hort. Cliff.* 46. Gromwell with smooth Seeds, and the Petal many Times longer than the Empalement. *Lithospermum minus repens latifolium.* *C. B. P.* 258. Smaller creeping broad leaved Gromwell.

4. LITHOSPERMUM *foliis subovalibus nervosis, corollis acuminatis.* *Lin. Sp. Pl.* 132. Gromwell with veined Leaves almost oval, and acute-pointed Petals. *Lithospermum latifolium Virginianum, flore albidis longiore.* *Mor. Hist.* 3. p. 447. Broad leaved Gromwell of Virginia, with a longer whitish Flower.

5. LITHOSPERMUM *villosam, caulibus procumbentibus simplicissimis.* *Mat. Med. Lin.* 58. Hairy Gromwell with single trailing Stalks. *Ancusa puniceis floribus.* *C. B. P.* 255. *Alkanet* with scarlet Flowers.

The 1st Sort grows naturally on Banks, and in dry Fields in many Parts of England, so is seldom admitted into Gardens. This hath a perennial Root, from which arise upright Stalks 2 Feet high, which branch out upward, and are garnished with Spear-shaped, rough, hairy Leaves, placed alternate, sitting close to the Stalks. The Flowers come out singly at every Joint of the small Branches, they are white, of one Petal, cut into 4 Parts at the Top, and stand within the Empalement; these are each succeeded by 4 hard white shining Seeds,

which ripen in the Empalement. It flowers in May, and the Seeds ripen in August.

The Seeds of this Plant are accounted a powerful Diuretick, and a Censer of the Reins and Ureters, being boiled in Wine or Water, and are of great Service against Gravel or Stoppage of Urine.

The 2d Sort is an annual Plant, which grows among Winter Corn in many Parts of England. This rises with a slender branching Stalk a Foot and a half high, garnished with narrow Spear-shaped rough Leaves placed alternately. The Flowers are produced singly on the upper Parts of the Stalks, they are small and white; these are succeeded by 4 rough Seeds, which ripen in the Empalement. It flowers in June, and the Seeds ripen in August, soon after which the Plants decay.

The 3d Sort grows naturally in Woods in many Parts of England; this has a perennial Root from which come out 2 or 3 trailing Stalks scarce a Foot long, garnished with long, narrow, Spear-shaped Leaves, placed alternately; these are smoother than those of the other Sorts. The Flowers are produced at the End of the Stalks from among the Leaves, they are white, and the Petals are much longer than the Empalements. These appear the latter End of May, and each is succeeded by 4 smooth Seeds, which ripen in the Empalement.

The 4th Sort grows naturally in North America; this hath a perennial Root, from which arise several very hairy Stalks, about a Foot and a Half high, garnished with rough, hairy, veined Leaves, almost oval, sitting close to the Stalks alternately. The Flowers grow in short reflexed Spikes at the End of the Branches; these are white, their Petals being longer than the Empalement, ending in acute Points. It flowers in June, and the Seeds ripen in Autumn.

The 5th Sort grows naturally in the South of France, and also in the *Levant*. This hath a perennial red Root, which runs deep in the Ground, from which comes out in the Spring a single trailing Stalk a Foot long, pretty closely set with Hairs, and garnished with rough prickly Leaves placed alternately. The Flowers are produced in short reflexed Spikes at the End of the Stalk, standing in hairy Empalements; these are of a reddish purple Colour inclining to scarlet, but as they decay change to a deep purple; they are tubulous, but cut at the Top into 4 or 5 Segments, the upper 2 are reflexed. It flowers in June, and the Seeds ripen in August and September.

This Sort stands in the List of medicinal Plants, but at present is rarely used: The Bark of the Root gives a fine purple Tincture, for which it is sometimes used, but the Colour is not permanent.

These may be cultivated by sowing their Seeds soon after they are ripe, in a Bed of fresh Earth, allowing them at least a Foot Distance from each other, observing to keep them clear from Weeds, and they will thrive in almost any Soil or Situation.

LOAM is a common superficial Earth, that is a Mixture of Sand and Clay, commonly of a yellowish Colour, though there is some Loam that is blackish. Some call Loam the most common superficial Earth met with in England, without any Regard to the Proportion it bears to Sand or Clay; but most generally the

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the Appellation of Loam is applied to a soft fat Earth, partaking of Clay, but easy to work.

It is found by Experience, that Plants of all Sorts will grow in it; and where-ever it is found, it appears to be a more beneficial Soil to Plants than any other. A Clay used in Grafting is also called Loam.

LOBELIA. Plum. Nov. Gen. 21. Tab. 31. Lin. Gen. Pl. 897.

The Characters are,

The Empalement of the Flower is small, of 1 Leaf, indented in 5 Parts, and grows about the Germen. The Flower has but 1 Petal, which is tubulous, and a little ringent, cut into 5 Parts at the Brim; 2 of the upper Segments are smaller than the other, are more reflexed and deeper cut, these constitute the upper Lip; the 3 lower spread open, and are larger. It hath 5 Awl-shaped Stamina the Length of the Tube, terminated by oblong cylindrical Summits, divided at their Base in 5 Parts. It has a pointed Germen under the Petal, supporting a cylindrical Style, crowned by an obtuse prickly Stigma. The Germen becomes an oval fleshy Berry with 2 Cells, each containing a single Seed.

We have but one Species of this Genus, viz.

LOBELIA frutescens, foliis ovali-oblongis integerrimis. Flor. Zeyl. 313. Shrubby Lobelia with oblong oval entire Leaves. Lobelia frutescens portulaca folio. Plum. Nov. Gen. 21. Shrubby Lobelia with a Purslain Leaf.

This Plant rises with a succulent Stalk, 5 or 6 Feet high, garnished with oval, oblong, succulent Leaves, which are placed alternately; these sit close to the Stalk. The Flowers are produced on long Foot Stalks, which come out from the Side of the Stalk, and sustain 2 or 3 white Flowers of 1 Petal, cut into 5 acute Segments at the Brim; these are succeeded by oval Berries as large as Bullace, containing a Stone with 2 Cells, in each of these is lodged a single Seed.

The Seeds of this Plant were sent to England by Mr. Catesby, in the Year 1724, who gathered them in the Babama Islands, where the Plants grow in Plenty, near the Shore of the Sea, and since that Time the Seeds have been sent to England, by Dr. William Houstoun, who gathered them at La Vera Cruz; so that I believe the Plant is common in most of the warm Parts of America.

It is propagated by Seed, which must be procured from the Countries of its natural Growth, for the Plants will not produce them in Europe; these Seeds should be sown in Pots filled with light sandy Earth, and then plunged into a hot Bed of Tanners Bark, where the Plants will come up in about a Month or five Weeks, provided the Bed is kept warm, and the Earth often watered. When the Plants are up, they should be kept in a temperate hot Bed, and frequently refreshed with Water, but it must not be given them in large Quantities, for they are very succulent, and subject to perish with much Moisture, especially while they are young. When the Plants are about 2 Inches high, they should be carefully taken out of the Pots in which they were sown, and each planted in a separate small Pot filled with fresh light sandy Earth, and then plunged into the hot Bed again, observing to shade them in the Heat of the Day, until they have taken new Root. In this hot Bed the Plants may remain until the middle, or latter

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End of September, when they must be removed into the Stove, and plunged into the Tan Bed, in the warmest Part of the Stove, for they are very tender Plants while young, therefore must be kept very warm, otherwise they will not live through the Winter in this Country. In the Spring following the Plants may be shifted into somewhat larger Pots, and then plunged into a fresh hot Bed to forward their Growth, for if they are not pushed on while they are young, they seldom grow to any Size, nor will they ever flower, so that in order to have them in any Beauty, they must be carefully managed. The Leaves of this Plant are very subject to contract Filth, by being constantly kept in the Stove, therefore they should be washed with a Sponge frequently, to keep them clean, otherwise they will appear unsightly.

LOBUS ECHINATUS. See Guilandina.

LOCULAMENTS are little distinct Cells, or Partitions, within the Seed Vessels of Plants.

LONCHITIS. Rough Spleenwort.

The Characters are,

The Leaves are like those of the Fern, but the Pinnule are eared at their Base; the Fruit also is like that of the Fern.

The Species are,

1. LONCHITIS aspera. Ger. Rough Spleenwort.
2. LONCHITIS aspera major. Ger. Emac. Greater rough Spleenwort.

The 1st of these Plants is very common in shady Woods, by the Sides of small Rivulets in divers Parts of England; but the second Sort is not quite so common, and has been brought into several curious Botanick Gardens from the Mountains in Wales. There are also great Variety of these Plants in America, which at present are Strangers in the European Gardens; they are seldom cultivated but in Botanick Gardens, for Variety, where they must have a moist Soil, and shady Situation.

LONGITUDINAL VESSELS, in Plants, are such as are extended in Length through the woody Parts of Trees and Plants, into which the Air is supposed to enter, and mix with the Juices of the Plant, and thereby augment its Bulk.

LONICERA. Lin. Gen. Pl. Chamæcerasus. Tourn. Inst. R. H. 609. Tab. 379. Upright Honeyfuckle.

The Characters are,

The Flower has a small Empalement, cut into 5 Parts, upon which the Germen sits. It hath 1 Petal, with an oblong Tube, cut into 5 Parts at the Brim, and 5 Awl-shaped Stamina, almost the Length of the Petal, terminated by oblong Summits. Under the Petal is situated a roundish Germen, supporting a slender Style the Length of the Petal, crowned by an obtuse Stigma. The Germen afterward turns to 2 Berries, which join at their Base.

The Species are,

1. LONICERA pedunculis bifloris, baccis distinctis, foliis integerrimis pubescentibus. Prod. Leyd. 238. Lonicera with 2 Flowers on each Foot Stalk, distinct Berries, and entire woolly Leaves. Chamæcerasus dumetorum fructu gemino rubro. C. B. P. 451. Dwarf Cherry with twin red Fruit, commonly called, Fly Honeyfuckle.

2. LONICERA peunculis bifloris, baccis coadunatis didymis. Lin. Sp. Pl. 174. Lonicera with 2 Flowers on a Foot Stalk, and twin Berries joined together. Chamæ-

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cerasus Alpina, fructu gemino rubro duobus punctis notato. C. B. P. 451. Dwarf Alpine Cherry with a red twin Fruit, marked with two Points, commonly called, Red-berried upright Honeyfuckle.

3. *LONICERA pedunculis bifloris*, baccis coadunatis globosis, stylis indivisis. Lin. Sp. Pl. 174. *Lonicera* with 2 Flowers on a Foot Stalk, globular Berries, joined, and undivided Styles. *Chamaecerasus montana*, fructu singulari-ceruleo. C. B. P. 451. Mountain Dwarf Cherry with a single blue Fruit, commonly called, Single blue-berried upright Honeyfuckle.

4. *LONICERA pedunculis bifloris*, baccis distinctis, foliis serratis. Prod. Leyd. 238. *Lonicera* with 2 Flowers on a Foot Stalk, distinct Berries, and sawed Leaves. *Chamaecerasus Alpina*, fructu nigro gemino. C. B. P. 451. Alpine Dwarf Cherry with a black twin Fruit, called, Black-berried upright Honeyfuckle.

5. *LONICERA pedunculis bifloris*, baccis distinctis, foliis cordatis obtusis. Hort. Upsal. 42. *Lonicera* with 2 Flowers on a Foot Stalk, distinct Berries and blunt Heart-shaped Leaves. *Chamaecerasus fructu gemino rubro, foliis glabris cordatis*. Amm. Ruth. 184. Dwarf Cherry with a twin red Fruit, and smooth Heart-shaped Leaves.

6. *LONICERA pedunculis bifloris*, baccis distinctis, foliis oblongis glabris. Lin. Sp. Pl. 174. *Lonicera* with 2 Flowers on a Foot Stalk, distinct Berries, and oblong smooth Leaves. *Xylosteum Pyrenaicum*. Tourn. Inst. 609. Pyrenean Dwarf Cherry.

7. *LONICERA capitulis lateralibus pedunculatis, foliis petiolatis*. Lin. Sp. Pl. 175. *Lonicera* with lateral Heads growing on Foot Stalks, and Leaves having Foot Stalks. *Symphoricarpos foliis alatis*. Dill. Hort. Eltb. 371. commonly called, shrubby St. Peterwort.

The 1st Sort has been many Years cultivated in the English Gardens under the Title of Fly Honeyfuckle. It grows naturally on the Alps, and in other cold Parts of Europe. It rises with a strong woody Stalk, 6 or 8 Feet high, covered with a whitish Bark, dividing into many Branches, garnished with oblong oval Leaves, placed opposite; they are entire, and covered with short hairy Down. The Flowers come out from the Side of the Branches on each Side, opposite, standing on slender Foot Stalks, each sustaining 2 white Flowers standing erect; these have 1 Petal, cut into 5 Parts, the 3 lower being narrow, and reflexed, the 2 broader stand upright; these appear in June, and are succeeded by 2 red clammy Berries, which are joined at their Base, and ripen the Beginning of September.

The 2d Sort grows naturally on the Alps; this has been long cultivated in the English Gardens, by the Title of Red-berried upright Honeyfuckle; this hath a short thick woody Stem, which divides into many strong woody Branches growing erect; these are garnished with Spear-shaped Leaves, placed opposite, standing on Foot Stalks; they are entire, their under Side being of a pale green, but their upper of a dark green. The Flowers stand on very long slender Foot Stalks, which come out opposite on each Side the Branches, at the Base of the Leaves; they are red on their Outside, but pale within, shaped like those of the former Sort, but a little larger; these appear the latter End of April, and are commonly succeeded by 2 oval red Berries, joined at their Base, which have two Punctures; these ripen the Beginning of August. Sometimes there is but 1 Berry

succeeding each Flower, which is frequently as large as a *Kentish* Cherry; this I believe has led some to suppose it was a distinct Species, as I thought myself, when I saw all the Fruit on the Shrub were single, but, the following Years, I found they had twin Fruit like the others.

The 3d Sort grows naturally on the *Apennines*; this is a Shrub of humbler Growth, than either of the former, seldom rising more than 4 or 5 Feet high. The Branches are slender, covered with a smooth purplish Bark. The Joints are distant, where the Leaves come out by Pairs, opposite, and sometimes there are two on each Side. The Foot Stalks of the Flowers are very short, each sustaining 2 white Flowers, shaped like those of the former Sorts; these are succeeded by blue Berries, which are single and distinct. The Flowers appear in May, and the Berries ripen in August.

The 4th Sort grows naturally on the Alps and *Helvetican Mountains*; this is a Shrub very like the former, but the Branches are slenderer. The Leaves are a little sawed on their Edges. The Flowers have 2 Berries succeeding them, in which consists their Difference. It flowers at the same Time with the former.

The 5th Sort grows naturally in *Tartary*, from whence the Seeds were sent to the Imperial Garden at *Petersburgh*, where they succeeded, and from thence the Seeds were sent to me; this is a Shrub which grows about the same Height with the two former, to which this has a great Resemblance in its Branches, but the Leaves of this are Heart-shaped, and the Berries are red, growing sometimes single, at others double, and frequently there are 3 joined together, which are about the same Size with the former. It flowers in April, and the Fruit is ripe in July.

The 6th Sort grows naturally on the *Pyrenean Mountains*, and also in *Canada*, from whence the Seeds were brought to Duke D'Ayen, which were sown in his curious Garden at *St. Germain*, where they succeeded, and his Highness was so good to furnish me with a Plant; this seldom rises more than 3 or 4 Feet high, dividing into several spreading irregular Branches, garnished with oblong smooth Leaves, placed by Pairs, opposite. The Flowers come out from the Side of the Branches, on slender Foot Stalks, each sustaining 2 white Flowers, which are cut into 5 Segments almost to the Bottom; these are succeeded by Berries as the other Sorts. It flowers in April.

The 7th Sort grows naturally in *North America*, but has been many Years propagated in the English Gardens; this hath a shrubby Stalk, which rises about 4 Feet high, sending out many slender plain Branches, garnished with oval hairy Leaves, placed by Pairs, opposite, having very short Foot Stalks. The Flowers are produced in Whorls round the Stalk; they are of an herbaceous Colour, and appear in August. The Fruit, which is hollow, and shaped like a Pottage Pot, ripens in the Winter. Dr. Dillenius, in his *Hortus Eltbamensis*, has titled this Plant, *Symphoricarpos foliis alatis*, supposing the Leaves to be winged, but as the Leaves fall off single, and the Branches remain upon which they were fixed, they cannot be called winged Leaves.

These Shrubs are now propagated in the Nursery Gardens, near *London*, for Sale, and are commonly intermixed with other flowering Shrubs for Variety, but

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as there is little Beauty in their Flowers, a few of them only should be admitted, to set off those which are preferable; they are all of them very hardy Plants, so will thrive in a cold Situation, better than in a warm one; they love a moist light Soil, in which they will thrive, and produce a greater Quantity of Fruit than in dry Ground.

They may be propagated either by Seeds, or Cuttings. The Seeds commonly lie in the Ground a Year before they vegetate, but require no particular Culture; if they are sown in Autumn, many of them will grow the following Spring. The Cuttings should be planted in Autumn in a shady Border, where they will put out Roots the following Spring, and in the following Autumn they may be removed into a Nursery, to grow two Years to get Strength, after which they should be transplanted where they are designed to remain.

LOPPING. It is very observable, that most old Trees are hollow within, which does not proceed from the Nature of the Trees, but is the Fault of those who have the Management of them, who suffer the Tops to grow large before they lop them, as the Ash, Elm, Hornbeam, &c. and persuade themselves, that they may have the more great Wood, but, in the mean Time, do not consider that the Cutting off great Tops endangers the Life of a Tree, or, at best, wounds it so, that many Trees yearly decay more in their Bodies, than the yearly Tops come to, and at the same Time that they furnish themselves with more great Wood, they do it at the Loss of the Owner. And, indeed, though the Hornbeam and Elm will bear great Tops when the Body is little more than a Shell, yet the Ash, if it comes to take Wet at the Head, very rarely bears more Top after the Body of the Tree decays; therefore, if once these Trees decay much in the Middle, they will be worth little but for the Fire, so that if you find a Timber Tree decay, it should be cut down in Time, that the Timber be not lost.

The Lopping of young Trees, that is, at 10 or 12 Years old at most, will preserve them much longer, and will occasion the Shoots to grow more into Wood in one Year, than they do in old Tops at two or three. Great Boughs, ill taken off, often spoil many a Tree, for which Reason they should always be taken off close and smooth, and not parallel to the Horizon, and cover the Wound with Loam and Horse Dung mixed, to prevent the Wet from entering the Body of the Tree.

When Trees are at their full Growth, there are several Signs of their Decay, as, the withering or dying of many of their Top Branches, or if the Wet enters at any Knot, or they are any-wise hollow, or discoloured, if they make but poor Shoots, or if the Woodpeckers make any Holes in them.

This Lopping of Trees is only to be understood for Pollard Trees, because nothing is more injurious to the Growth of Timber Trees, than that of lopping or cutting off great Branches from them; whoever will be at the Trouble of trying the Experiment on 2 Trees of equal Age and Size, growing near each other, to lop or cut off the Side Branches from one of them, and suffer all the Branches to grow upon the other, will, in a few Years find the latter to exceed the other in Growth every Way, and this will not decay near so soon.

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All Sorts of resinous Trees, or such as abound with a milky Juice, should be lopped very sparingly, for they are subject to decay when often cut. The best Season for lopping these Trees, is soon after Bartholomew Tide, at which Time they seldom bleed much, and the Wound is commonly healed over before the cold Weather comes on.

LORANTHUS. Vaill. *Atl. R. St.* 1702. *Lin. Gen. Pl.* 400. *Lonicera.* *Plum. Nov. Gen.* 17. *Tab.* 37.

The Characters are,

The Empalement of the Flower is entire, concave, and crowns the Germen. The Flower is tubulous, and cut into 5 narrow Segments, almost to the Bottom, which are reflexed. It hath 4 Stamina, longer than the Tube of the Flower, terminated by globular Summits. The Germen, which is situated below the Empalement, supports a single Style, longer than the Stamina, crowned by an oval Stigma. The Germen becomes an oval pulpy Fruit with 1 Cell, including several compressed Seeds.

There is but one Species of this Genus at present known, viz.

LORANTHUS. *Lin. Sp. Pl.* 331. *Loranthus racemosus, flore coccineo, baccis nigris.* Vaill. *Atl.* 1722. Branching *Loranthus* with a scarlet Flower, and black Berries. *Lonicera flore coccineo, baccis nigris.* *Plum. Nov. Gen.* 17. *Lonicera* with a scarlet Flower, and black Berries.

This Plant was discovered by Father Plumier, in the French Islands in America, and was afterward found growing naturally at La Vera Cruz, by the late Dr. Houstoun, who sent the Seeds to England; this rises with a shrubby weak Stalk, 8 or 10 Feet high, dividing into several Branches at the Top, garnished with oblong entire Leaves, which have the 3 longitudinal Nerves. The Flowers are produced at the End of the Branches in small Clusters, and are of a scarlet Colour; they are cut into 5 narrow Segments, almost to the Bottom; these are succeeded by oval Berries, with a Pulp covering a hard Shell with 1 Cell, inclosing several compressed Seeds.

The Title of *Lonicera* was given by Father Plumier, in Honour of Adam Lonicera, who published a History of Plants at Franckfort, in 1588, but Vaillant, altered the Name to *Loranthus*, in the Memoirs of the Academy of Sciences at Paris, for 1722, in which Dr. Linnæus has followed him.

This Plant is propagated by Seeds, which should be sown as soon as possible, when they are ripe, for if they are kept out of the Ground long, they often miscarry, or if they do grow, it is not till the Year after, so that those Seeds which come from America, very seldom grow the first Year, therefore they should be sown in Pots, and kept in a moderate hot Bed the first Summer, and in Autumn removed into the Stove, where if the Pots are plunged in the Tan Bed between the Plants, the Earth will be kept moist, and in the Spring they may be taken out, and plunged into a moderate fresh hot Bed, which will bring up the Plants, which must be planted in separate small Pots, and kept in the Bark Stove, treating them as other tender Plants from the same Country.

LOTUS. *Tourn. Inst. R. H.* 402. *Lin. Gen. Pl.* 803. Birds-foot Trefoil; in French, *Lotier.*

The Characters are,

The Empalement of the Flower is of 1 Leaf, permanent and

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and cut at the Top into 5 Parts. The Flower is of the Butterfly Kind. The Standard is roundish, and reflexed backward. The Wings are broad, roundish, and shorter than the Standard, closing together at the Top. The Keel is closed on the upper Side, and convex on the under, rising a little. It hath 10 Stamina, 9 joined and 1 separate, terminated by small Summits, with an oblong taper Germen, supporting a single Style, crowned by an inflexed Stigma. The Germen becomes a close cylindrical Pod with 1 Cell, opening with 2 Valves, having many transverse Partitions, in each of these is lodged 1 roundish Seed.

The Species are,

1. *Lotus capitulis depressis, caulibus decumbentibus, leguminibus cylindricis*. Lin. Sp. Pl. 775. Birds-foot Trefoil with depressed Heads, trailing Stalks, and cylindrical Pods. *Lotus corniculata glabra, minor*. J. B. 2. 336. Lesser smooth corniculated Birds-foot Trefoil.

2. *Lotus leguminibus subbinatis linearibus strictis erectis, caule erecto, pedunculis alternis*. Lin. Sp. Pl. 774. Birds-foot Trefoil with erect linear strait Pods, growing in Pairs, an erect Stalk, and alternate Foot Stalks. *Lotus pentaphyllos, minor, hirsutus siliqua angustissima*. C. B. P. 332. Smaller five leaved hairy Birds-foot Trefoil, with very narrow Pods.

3. *Lotus capitulis depressis, caulibus decumbentibus, foliis linearibus glabris, leguminibus linearibus*. Birds-foot Trefoil with depressed Heads, trailing Stalks, smooth linear Leaves, and very narrow Pods. *Lotus pentaphyllos frutescens, tenuissimis glabris foliis*. C. B. P. 332. Shrubby five leaved Birds-foot Trefoil with very narrow smooth Leaves.

4. *Lotus capitulis subglobosis, caule erecto, leguminibus rectis glabris*. Hort. Ups. 221. Birds-foot Trefoil with globular Heads, an erect Stalk, and strait smooth Pods. *Lotus villosus, altissimus, flore glomerato*. Tourn. Inst. R. H. 403. Tallest hairy Birds-foot Trefoil with a glomerated Flower.

5. *Lotus capitulis dimidiatis, caule fruticoso, foliis nitidis*. Hort. Cliff. 372. Birds foot Trefoil with Heads divided in the Middle, a shrubby Stalk, and shining Leaves. *Lotus argentea Cretica*. Pluk. Alm. 226. Silvery Birds-foot Trefoil of Crete.

6. *Lotus capitulis hirsutis, caule recto hirsuto, leguminibus ovatis*. Hort. Upsal. 220. Birds-foot Trefoil with hairy Heads, an erect hairy Stalk, and oval Pods. *Lotus pentaphyllos siliquosus villosus*. C. B. P. 332. Five leaved, hairy, podded Birds-foot Trefoil.

7. *Lotus capitulis subglobosis hirsutis, caule erecto ramoso, hirsuto, foliis tomentosis*. Birds-foot Trefoil with globular Heads, which are hairy, an upright branching hairy Stalk, and woolly Leaves. *Lotus hæmorrhoidalis humilior & candidior*. Tourn. Inst. 403. Lower Birds-foot Trefoil, having whiter Leaves.

8. *Lotus leguminibus subquinatis arcuatis compressis, caulibus diffusis*. Hort. Cliff. 372. Birds-foot Trefoil with 5 arched compressed Pods, and diffused Stalks. *Lotus siliquis ornithopodii*. C. B. P. 332. Birds-foot Trefoil, with Pods like Birds-foot.

9. *Lotus leguminibus subbinatis linearibus compressis nutantibus*. Hort. Cliff. 372. Birds-foot Trefoil with 2 narrow compressed nodding Pods. *Lotus siliquis geminis peregrina*. Bober. Ind. 2. p. 38. Foreign Birds-foot Trefoil with twin Pods.

10. *Lotus leguminibus solitariis rectis teretibus termi-*

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nalibus, caule erecto. Sauv. Monsp. 189. Birds-foot Trefoil with an erect Stalk, terminated by a single taper erect Pod. *Lotus pratensis siliquosa lutea*. C. B. P. 332. Yellow, Meadow, podded Birds-foot Trefoil.

11. *Lotus leguminibus subsolitariis gibbis incurvis*. Hort. Cliff. 370. Birds-foot Trefoil with single Convex incurved Pods. *Lotus pentaphyllos, siliqua cornuta*. C. B. P. 332. Five leaved Birds-foot Trefoil with horned Pods.

12. *Lotus leguminibus solitariis membranaceo-quadrangulatis, bracteis lanceolatis*. H. W. 143. Flor. Succ. 610. Birds-foot Trefoil with single Pods which are made quadrangular by a Membrane, and Spear-shaped Bractæ. *Lotus maritima lutea siliquosa, folio pingui glabra*. Bot. Monsp. Podded, yellow, maritime Birds-foot Trefoil with a smooth Leaf.

13. *Lotus leguminibus conjugatis membranaceo-quadrangulatis, bracteis oblongo-ovatis*. Lin. Sp. Pl. 774. Birds-foot Trefoil with conjugated Pods, which are made quadrangular by a Membrane, and oblong oval Bractæ. *Lotus lutea, siliqua angulosa*. Boerb. Ind. Alt. 2. p. 37. Yellow Birds-foot Trefoil with angular Pods.

14. *Lotus leguminibus solitariis membranaceo-quadrangulatis, bracteis ovatis*. Hort. Ups. 220. Birds-foot Trefoil with single Pods which are quadrangular, with a Membrane and oval Bractæ. *Lotus ruber siliqua angulosa*. C. B. P. 332. Red Birds-foot Trefoil with angular Pods, commonly called Winged Pea.

15. *Lotus capitulis dimidiatis, caule diffuso ramosissimo, foliis tomentosis*. Prod. Leyd. 387. Birds-foot Trefoil with Heads divided into 2 equal Parts, a very branching diffused Stalk and woolly Leaves. *Lotus siliquosa maritima lutea, Cytisi facie*. Barrell. Icon. 1031. Podded, yellow, maritime Birds-foot Trefoil with the Appearance of *Cytisus*.

16. *Lotus leguminibus subternatis, caule herbaceo erecto, foliis linearibus*. Hort. Cliff. 372. Birds-foot Trefoil with 3 Pods, an erect herbaceous Stalk and narrow Leaves. *Lotus angustifolia, flore luteo purpurascente*. Insule, St. Jacobi. Hort. Amst. 2. p. 165. Narrow leaved Birds-foot Trefoil of St. James's Island, with a yellow purplish Flower.

17. *Lotus capitulis apbyllis, foliis sessilibus quinatis*. Lin. Sp. Plant. 776. Birds-foot Trefoil with naked Heads, and Leaves placed by Fives setting close to the Branches. *Dorycnium Monspeliensium*. Lob. Icon. 51. *Dorycnium* of Montpellier.

The 1st, 2d, and 3d Sorts grow naturally in many Parts of England, so are rarely admitted into Gardens. When these grow in moist Land and a shady Situation, they send out Stalks near 2 Feet long, but upon dry chalky and gravelly Ground, their Stalks are not more than 3 or 4 Inches long, and lie flat on the Ground. I have always observed in those Pastures where these Plants have grown, that the Cattle of all Sorts have avoided eating them, but the Grass all round them has been eaten very bare. I have cut the Plants when young, and given it to various Kinds of Animals, but could never get them to eat it; and yet the Seeds of these have been gathered and sold by some Quacks in Husbandry, under the Title of Lady's Finger Grass, to be sown as an Improvement to Land for Pasture.

The Roots of these are perennial, so are difficult to

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get out when they have had long Possession of the Land, and they produce great Quantities of Seeds, which is cast about by the Elasticity of the Pods when ripe, to a considerable Distance; they flower in *June*, and the Seeds ripen in *September*.

The 4th Sort grows naturally in the South of *France*, in *Italy* and *Sicily*, this has by some been supposed the *Cytisus* of *Virgil*, but without Foundation, for it does not answer the Description given of that Plant. This hath a strong perennial Root, from which arise many upright strong Stalks from 3 to 4 Feet high, covered with a purplish Bark, and toward the Top, send out a few Side Branches; these are garnished at every Joint by a trifoliate Leaf, whose Lobes are Wedge-shaped; at the Base of the Foot Stalk are placed 2 Heart-shaped Lobes sitting close to the Branch; the Leaves are hairy on their under Side; the Flowers are produced at the End of the Branches almost in globular Heads, sitting close to the Foot Stalk: These are of a pale Flesh Colour and appear in *June*, and are succeeded by smooth strait Pods almost an Inch long, which change to a brown Colour when ripe, and contain several roundish Seeds which ripen in *September*. It is rarely cultivated but in Botanick Gardens for Variety, but if any Person has an Inclination to cultivate this Plant for feeding Cattle, it may be done in the same Way as the *Lucern*, for which there is full Directions in the Article *Medicago*. It rises easily from Seeds, is very hardy, and will thrive on any light dry poor Ground. Cows and Horses will eat this Plant when green; but I have not tried if they will feed on it when made into Hay.

The 5th Sort grows naturally in *Syria* and *Crete*, this rises with slender Stalks which require Support, from 3 to 4 Feet high, sending out a few side Branches; these are garnished at each Joint with neat shining silvery Leaves, which are trifoliate, and have 2 Appendages at the Base of their Foot Stalks, as the other Sort; they are in Shape like the former, but a little smaller, and have an acute short Point at their Top. The Foot Stalks of the Flowers, which are from 2 to 3 Inches long, arise from the Side of the Branches, and sustain Heads of yellow Flowers, which part in the Middle, each Head containing 4 or 6 Flowers; these appear in *May*, *June*, and *July*, and are succeeded by long taper Pods filled with roundish Seeds which ripen in the Autumn.

This Sort has a perennial Stalk, but is too tender to live thro' the Winter in the open Air in *England*, so is kept in Pots and removed into the Green-house in Autumn, and treated like other hardy exotick Plants, which only require Protection from Frost, so want no artificial Heat. It may be propagated by Seeds, which if sown on a Bed of light Earth in *April*, the Plants will come up in about a Month after; and in another Month will be fit to remove, when they should be each put into a separate small Pot filled with fresh light Earth, placing them in the Shade till they have taken new Root, then they may be removed to a sheltered Situation, where they may remain till Autumn.

It may be also propagated by Cuttings, which may be planted during any of the Summer Months, on a Bed of light Earth, covering them close with a Bell or Hand Glass, and screening them from the Sun, in about 5 or 6 Weeks they will have taken Root, when they must be inu-

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red to bear the open Air, and soon after may be planted in Pots, and treated as the seedling Plants.

The 6th Sort grows naturally in the South of *France* and *Italy*, this hath a perennial Stalk, which rises 3 Feet high; when the Roots are large, they frequently send up several of these Stalks, especially if the old ones are cut down; the Stalks are hairy and divide into several Branches closely garnished with hoary trifoliate Leaver, having 2 Appendages at the Base of the Stalk; the Flowers are collected into Heads sitting on pretty long Foot Stalks, which come out of the Side of the Stalks. They have very hairy Empalements, and are of a dirty white Colour with a few Marks of pale red. They appear in *June* and *July*, and are succeeded by short thick Pods of a Chestnut Colour, containing several roundish Seeds which ripen in the Autumn. This is propagated by Seeds as the last Sort; the Plants will live thro' the Winter in the open Air in moderate Winters, but it will be proper to keep 1 or 2 Plants in Pots to be sheltered in Winter, lest those abroad should be destroyed by severe Frost.

The 7th Sort grows naturally in *Sicily*, this rises with an upright woody Stalk near 3 Feet high, garnished with Leaves like the sixth, but they are much whiter, covered with a short woolly Down, as are also the Stalks; the Flowers grow in close Heads like the last, they are whiter, and are succeeded by short Pods, which contain many yellow Seeds. It flowers in Summer, and the Seeds ripen in Autumn. This is too tender to live in the open Air in *England* through the Winter, so the Plants must be kept in Pots and housed during the Season. It is propagated as the 5th Sort, and requires the same Culture.

The 8th Sort grows naturally in *Sicily*; this is an annual Plant, which sends out from the Root many stiff Stalks from 1 to 2 Feet high, which divide into many Branches growing diffused without any Order, and are garnished with trifoliate Leaves, having two Appendages at their Base, the Foot Stalks of the Flower rise from the Wings of the Stalks; they are 2 or 3 Inches long, terminated by a Cluster of yellow Flowers, which are succeeded by flat Pods 2 Inches long which are bent like an Arch, and have many Joints, separating the Cells in which the Seeds are lodged. It flowers in *July*, and the Seeds ripen in Autumn, and the Plants decay soon after.

This is propagated by Seeds which should be sown early in *April*, on an open Bed or Border exposed to the Sun, where the Plants are to remain: When they come up they must be thinned, leaving them near two Feet asunder, and afterwards they must be kept clean from Weeds, which is all the Culture they require.

The 9th Sort grows naturally in *Spain* and *Portugal*; this is an annual Plant like the former, but doth not branch so much, the small Leaves are rounder at their Ends, and they are smoother; the Foot Stalks are shorter, and seldom sustain more than 2 Flowers, these are succeeded by 2 very narrow Pods about 2 Inches long which hang downward. This requires the same Culture as the former.

The 10th Sort grows naturally in the South of *France*, this hath a perennial Root, from which is sent out several hairy Stalks near a Foot long, garnished with trifoliate

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foliate hairy Leaves standing on short Foot Stalks with two Appendages at the Base of the Foot Stalk, the Flowers stand on pretty long Foot Stalks singly, which rise from the End of the Branches; they have long hairy Empalements with two oblong acute-pointed Leaves immediately under them. The Flowers are yellow, standing erect, and are succeeded by taper erect Pods an Inch and a Half long. It flowers in *June* and *July*, and the Seeds ripen in Autumn. It is propagated by Seeds, which should be sown where the Plants are to remain, and must be treated as the two former Sorts, but the Roots of this will continue several Years.

The 11th Sort grows naturally in *Sicily* and *Crete*, where the Pods are eaten by the poorer Inhabitants when they are young. It also grows about *Nice*, from whence I received the Seeds. This is an annual Plant, from whose Roots come out several trailing Stalks a Foot long, garnished at each Joint with trifoliate roundish Leaves having Appendages. The Flowers stand singly on long Foot Stalks, which rise from the Side of the Branches; they are yellow and small, and are succeeded by single Pods, which are thick and arched with a deep Furrow on the Outside. The Flowers appear in *June* and *July*, and in warm Seasons the Seeds ripen in the Autumn; but in cold Summers they will not ripen here. This must have the same Culture as the annual Sorts before-mentioned.

The 12th Sort grows near the Borders of the Sea in *France*, *Spain*, and *Italy*; this hath a perennial Root, sending out many slender Stalks about a Foot and Half long, which trail on the Ground, and are garnished with trifoliate Leaves at each Joint, which are smooth and have 2 Appendages to the Base of the Foot Stalk. The Flowers stand singly on very long Foot Stalks arising from the Wings of the Stalk, which is yellow, and are succeeded by single Pods near 2 Inches long, having 4 leafy Membranes running longitudinally at the four Corners. This flowers in *June* and *July*, and the Seeds ripen in Autumn. It is propagated by Seed as the 10th Sort.

The 13th grows naturally in the South of *France* and in *Italy*; this is an annual Plant, from whose Roots are sent forth several branching Stalks a Foot long, garnished with trifoliate Leaves, whose Lobes are acute pointed, and have 2 oblong oval Appendages at the Base of their Foot Stalks; the Foot Stalks of the Flowers arise from the Wings of the Branches, each sustaining 2 yellow Flowers, which are succeeded by taper Pods near 2 Inches long, having 4 leafy Membranes running longitudinally their Length. It flowers in *July*, and the Seeds ripen in Autumn. It is propagated by the Seeds as the annual Sorts beforementioned.

The 14th Sort grows naturally in *Sicily*, but has been long cultivated in the *English* Gardens; it was formerly cultivated as an esculent Plant. The Green Pods of it were dressed and eaten as Peas, which the Inhabitants of some of the northern Countries still continue, but they are very coarse, so not agreeable to the Taste of those who have been accustomed to better Fare.

It is an annual Plant which is cultivated in the Flower Gardens near *London* for Ornament. This sends out from the Root several decumbent Stalks about a Foot long, garnished at each Joint with trifoliate oval Leaves, having oval Appendages at the Base of their Foot Stalks,

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from each Joint arise alternately the Foot Stalks of the Flowers, which are from 2 to 3 Inches long, each sustaining 1 large red Flower at the Top with 3 Leaves just under the Flower. After the Flower fades, the Germen becomes a swelling taper Pod 2 Inches long, having 4 leafy Membranes or Wings running longitudinally. It flowers in *June* and *July*, and the Seeds ripen in Autumn.

The Seeds of this Sort are commonly sown in Patches, 5 or 6 Seeds being sown near each other, in the Borders of the Pleasure Garden, where they are designed to remain. If the Seeds all grow, some of the Plants may be pulled up, leaving only 2 or 3 in each Patch, and afterward they will require no other Care but to keep them clean from Weeds.

The 15th Sort grows near the Borders of the Sea, in the South of *France* and *Spain*. This is a perennial Plant, sending out from the Root many Stalks which branch out their whole Length, and are garnished with roundish trifoliate Leaves with 2 Appendages, they are covered with a woolly Down; the Flowers stand on short Foot Stalks, 4 or 6 growing in a divided Head they are yellow and appear in *July*, and are succeeded by taper Pods filled with roundish Seeds, which ripen in Autumn. This is propagated by Seeds, which should be sown in the Spring in the Place where the Plants are to remain, and must be treated as the hardy perennial Sorts before mentioned.

The 16th Sort grows naturally in the Island of *St. James*, from whence the Seeds were first brought to *Europe*, but I have since received the Seeds from the *Cape of Good Hope*. This has a slender Stalk which is very woody, rising from 2 to 3 Feet high, sending out many slender herbaceous Branches, garnished with narrow gray Leaves, which are sometimes trifoliate, and at others there are five narrow Lobes to each; these sit close to the Branches, and are inclining to be hoary. The Flowers are produced from the Side of the Stalks towards their End, on very slender Foot Stalks; each sustaining 4 or 5 Flowers collected in a Head of yellowish deep purple Colour, which are succeeded by taper slender Pods little more than an Inch long, containing 5 or six small roundish Seeds. This Plant flowers all the Summer and Autumn, and many Times great Part of the Winter, especially if the Plants are placed in a dry airy Glass Case, where they may be free from Damp, for nothing is more prejudicial to them. It is too tender to live abroad in *England*, so the Plants must be kept in Pots, and in the Winter placed in a warm airy Glass Case; but in the Summer they should be placed abroad in a sheltered Situation. It may be easily propagated by Cuttings, during the Summer Season, as the fifth Sort, and also by Seeds; but the Plants which have been two or three Times propagated by Cuttings, seldom are fruitful.

The 17th Sort grows naturally about *Montpelier*, it rises with weak shrubby Stalks 3 or 4 Feet high, sending out many slender Branches thinly garnished with small hoary Leaves growing with 5 Lobes in Form of a Hand; they sit close to the Branches. The Flowers are produced at the Extremity of the Branches, in small Heads; they are very small and white, so make no great Appearance; they appear in *June*, and are succeeded by short Pods containing 2 or 3 small round Seeds

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which ripen in Autumn. This Shrub will live in the open Air if it be planted in a dry Soil and a warm Situation. It is propagated by Seeds, which will come up in any common Border.

LOTUS ARBOR. See Celtis.

LOVE-APPLE. See Lycopersicon.

LUDVIGIA. Lin. Gen. Pl. 142.

The Characters are,

The Empalement of the Flower is of 1 Leaf, cut into 4 Segments at the Top, and sits upon the Germen. The Flower consists of 4 Spear-shaped Petals which are equal, and spread open. In the Center of the Flower is situated the four-cornered Pointal, attended by 4 Stamina: The Germen becomes a four-cornered Fruit, crowned with the Empalement; and has 4 Cells, full of small Seeds.

We have but one Species of this Genus, in the English Gardens at present. Which is

LUDVIGIA foliis alternis lanceolatis. Lin. Sp. Pl. 118. Ludvigia with alternate Spear-shaped Leaves. Ludvigia capsulis subrotundis. Hort. Cliff. 491. Ludvigia with roundish Capsules.

We have no English Name for this Plant; but it is very near a-kin to the Onagra, or Tree Primrose.

This Plant grows naturally in South Carolina, from whence the late Dr. Dale sent me the Seeds. It is annual and rises with an upright branching Stalk a Foot high, garnished with Spear-shaped Leaves placed alternate. The Flowers come out singly at the Foot Stalks of the Leaves, they are composed of 4 small yellow Petals, which spread open, standing on short Foot Stalks; these are succeeded by roundish Seed Vessels with 4 leafy Membranes, that open in 4 Cells including many small Seeds. It flowers in July and the Seeds ripen in the Autumn.

The Plants must be raised in a hot Bed in the Spring, and treated as hath been directed for the Amaranthus; for if they are not brought forward in the Spring, they seldom produce good Seeds in England.

LUFFA. Tourn. Aët. R. S. 1709. Momordica. Lin. Gen. 967. Egyptian Cucumber.

The Characters are,

It hath a Bell-shaped Flower, consisting of 1 Leaf, divided into 5 Parts to the Center; there are male and female Flowers on the same Plant. The male Flowers are produced on short Foot Stalks, having no Embryos; but the female Flowers rest on the Top of the Embryos, which afterward become a Fruit like a Cucumber to outward Appearance, but is not fleshy; the inner Part consisting of many Fibres, which are elegantly netted; and there are 3 Cells, filled with Seeds, which are almost of an oval Shape.

We have but one Sort of this Plant, viz.

LUFFA. Arabum. Tourn. Aët. R. 1709. The Luffa of the Arabians.

There are two Varieties of this Plant, one having white, and the other Black Seeds; but these are not distinct Species.

This Plant may be propagated as Cucumbers and Melons, by sowing the Seeds on a hot Bed the Beginning of March; and when the Plants are come up, they must be pricked into a fresh hot Bed to strengthen the Plants, observing to let them have fresh Air every Day in warm Weather, and to refresh them frequently with Water. When the Plants have 4 or 5 Leaves, they

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should be planted out on a hot Bed, where they are designed to remain, which should be under Frames, and but one Plant put into each Hole; for as these Plants send forth a great Number of Side Shoots, where they are planted too close, they will entangle one into the other, and become so thick, as to cause the Fruit to drop. In the Management of these Plants after they are planted out for good, there must be the same Care taken as for Melons and Cucumbers, with this Difference only, that these require a larger Share of Air in warm Weather; otherwise the Vines will grow weak, and will not produce Fruit.

When the Plants have spread, so as to fill the Frames on every Side, the Frames should be raised on Bricks, and the Ends of the Plants drawn out, that they may have Room to grow; for when these Plants are in a vigorous State, they will spread 8 or 10 Feet; so that if they are confined, they will become so thick, as to rot the tender Branches which are covered from the Air, and there will be no Fruit produced.

The Fruit, when it is young, is by some People eaten, and made into Mangos, and preserved in Pickle; but it hath a very disagreeable Taste, and is not accounted very wholesome: Wherefore these Plants are seldom cultivated in Europe, except by such Persons as are curious in Botany, for Variety.

LUNARIA. Tourn. Infl. R. H. 218. Tab. Gen. 103. Plant. 725. Moonwort, Sattin-Flower, or Honesty; in French, Bulbonack.

The Characters are,

The Empalement of the Flower is composed of 4 oblong oval small Leaves, which are obtuse and fall off; the Flower has 4 Petals in form of a Cross, which are large, obtuse, and entire: It has 6 Awl-shaped Stamina, 4 of these are the Length of the Empalement; the other 2 are shorter, terminated by erect Summits. It has an oblong oval Germen sitting on a small Foot Stalk, supporting a short Style crowned by an entire obtuse Stigma. The Germen becomes an erect plain compressed elliptical Pod sitting on the small Foot Stalk, terminated by the Style, having 2 Cells opening with 2 Valves, which are parallel, inclosing several compressed Kidney-shaped Seeds, which are bordered, sitting in the Middle of the Pod.

The Species are,

1. LUNARIA filiculis oblongis. Lin. Sp. Pl. 653. Sattin Flower with oblong Pods. Lunaria major, siliqua longiore. J. B. 2. 881. Greater Moonwort, with longer Pods, commonly called Honesty, or White Sattin.

2. LUNARIA filiculis subrotundis. Lin. Sp. Pl. 653. Sattin Flower with roundish Pods. Lunaria major, siliqua rotundiore. J. B. Greater Moonwort, with a rounder Pod.

3. LUNARIA foliis supra decompositis, foliolis trifidis, filiculis oblongis pendulis. Moonwort with Leaves decomposed whole Lobes are trifid, and oblong hanging Pods. Cardamine foliis supra decompositis, siliquis unilobularibus pendulis. Lin. Sp. Pl. 656. Lady's Smock with Leaves decomposed above, and hanging Pods containing 1 Cell.

4. LUNARIA perennis, filiculis oblongis, foliis lanceolatis incanis. Perennial Moonwort, with oblong Pods and Spear-shaped hoary Leaves. Lunaria perennis, lutea, folio leucis, ramis expansis. Vaill. Yellow perennial Moonwort, with a Stock Gilliflower Leaf and expanded Branches.

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The 1st Sort grows naturally in *Hungary, Istria, and Austria*, but has been long an Inhabitant of the *English Gardens*. It is a biennial Plant, which perishes soon after the Seeds are ripe; it rises with a branching Stalk from 2 to 3 Feet high, covered with a reddish hairy Bark, sending out Branches on every Side from the Ground upward; these are garnished with Heart-shaped Leaves placed alternately, ending in acute Points indented on their Edges, and a little hairy, the lower standing on pretty long Foot Stalks, but the upper sit close to the Branches. The Flowers are produced at the Top and from the Side of the Branches toward their Ends in Clusters; they are composed of 4 purplish Heart-shaped Petals placed in Form of a Cross. These appear in *May*, and are succeeded by large flat roundish Pods with 2 Cells, inclosing two Rows of flat Kidney-shaped Seeds, which have a Border round them. These Pods, when ripe, turn to a clear white or Sattin Colour, and are transparent.

The Seed Vessels of this Plant, when they are full ripe, become very transparent, and of the Appearance of white Sattin, at which Time the Branches are cut off and dried, after which they are preserved to place in the Chimneys of Halls and large Rooms, where they continue a long Time in Beauty.

This is propagated by Seeds, which should be sown in Autumn, for those which are sown in the Spring often miscarry, or lie a long Time in the Ground. The Plants will grow in almost any Soil, but love a shady Situation; it requires no other Culture, but to keep it clean from Weeds. If the Seeds are permitted to scatter, the Plants will rise without any farther Care; and if they are left unremoved, they will grow much larger than those which are transplanted; the Roots of this Sort perish soon after the Seeds are ripe.

The 2d Sort grows naturally on the Mountains in *Italy*; this hath Stalks and Leaves very like the first, but the Flowers are rather larger, and of a lighter purple Colour; but the principal Difference is in the Pods of this being longer and narrower than those of the other. It flowers and seeds at the same Time with the first, and requires the same Culture.

The 3d Sort is an annual Plant, which grows naturally in *Egypt*. This rises with a smooth branching Stalk, little more than a Foot high, garnished with winged Leaves, composed of several Pair of Lobes ranged along the Mid-rib, terminated by an odd one; these Lobes are of unequal Sizes, and vary in their Form; some of them are almost entire, and others are cut at their extremities into three Parts; they are smooth, and of a lucid green. The Flowers stand each on pretty long slender Foot Stalks, which come out from the Side, and also at the End of the Branches, in loose small Clusters; they are of a purple Colour, and are succeeded by oblong compressed Pods, which hang downward. This Sort flowers in *June* and *July*, the Seeds ripen the Beginning of *September*, and the Plants decay soon after.

This is propagated by Seeds, which should be sown on an open Border, where the Plants are to remain; if they are sown soon after they are ripe, the Plants will come up in the Autumn, and live through the Winter without Shelter, and these will flower early the following Summer; they may also be sown in the Spring in like Manner. When the Plants come up, they will require

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no other Care, but to keep them clean from Weeds, and thin them where they are too close. If the Seeds are permitted to scatter in Autumn, the Plants will rise without Care, and may be treated the same Way.

The 4th Sort grows naturally in the *Archipelago*; this hath a perennial Root, from which arise 2 or 3 ligneous Stalks a Foot high, covered with a white hairy Bark, branching upward into several smaller Branches; these are garnished with Spear-shaped Leaves sitting close to the Branches, and a little hoary. The Branches are terminated by loose Spikes of yellow Flowers which appear in *June*, and are succeeded by oblong flat Pods, containing flat Kidney shaped Seeds, which ripen in Autumn.

This Sort is propagated by Seeds, which, if sown in the Autumn, will succeed better than in the Spring; they should be sown on a warm Border and a dry poor Soil, otherwise they will not live through the Winter; but in a rubbishy Soil, the Plants will continue 3 or 4 Years.

LUPINUS. *Tourn. Inst. R. H. 392. Tab. 213. Lin. Gen. P. 774.* Lupine; in *French, Lupin.*

The Characters are,

The Empalement is bifid and of 1 Leaf; the Flower is of the Butterfly Kind; the Standard is roundish, Heart-shaped, indented at the Top, and the Sides reflexed and compressed. The Wings are nearly oval, and almost as long as the Standard; they are not fixed to the Keel, but close at their Base; the Keel is as long as the Wings, but is narrow, falcated, and ends in a Point. It hath 10 Stamina joined at their Base in two Bodies, but as they rise are distinct above, terminated by 5 oblong Summits. In the Center is situated a hairy, compressed, Awl-shaped Germen, supporting a rising Style terminated by an obtuse Stigma. The Germen becomes a large, oblong, thick shelled Pod with 1 Cell, ending with an acute Point, including several roundish compressed Seeds.

The Species are,

1. LUPINUS calycibus semiverticillatis appendiculatis, labio superiore bifido, inferiore subtridentato. *Hort. Cliff. 499.* Lupine with Empalements half whorled and having Appendages, whose upper Lip is bifid, and the under one almost trident. *Lupinus sylvestris, purpureo flore, semine rotundovario. J. B. 2. 291.* Wild Lupine, with a purple Flower and a round variegated Seed, commonly called the lesser blue Lupine.

2. LUPINUS calycibus alternis appendiculatis, labio superiore bipartito, inferiore integro. *Lin. Sp. Pl. 721.* Lupine with Empalements having alternate Appendages, whose upper Lip is divided into 2, and the under one entire. *Lupinus angustifolius cæruleus elatior. Raii Hist. 908.* Narrow leaved taller blue Lupine.

3. LUPINUS calycibus verticillatis appendiculatis, labio superiore bipartito, inferiore tridentato. *Hort. Cliff. 499.* Lupine with Empalements growing in Whorls, and having Appendages to them, whose upper Lips are cut into 2 Parts, and the under into three. *Lupinus sylvestris, flore luteo. C. B. P. 348.* The common yellow Lupine.

4. LUPINUS calycibus verticillatis appendiculatis, labio superiore inferioreque integris. *Hort. Cliff. 499.* Lupine with Whorl-shaped Empalements having Appendages, and the upper and under Lip entire. *Lupinus peregrinus major, vel villosus, cæruleus, major. C. B. P. Foreign, greater,*

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greater, hairy Lupine, with a large blue Flower, commonly called the great blue Lupine.

5. *LUPINUS calycibus alternis inappendiculatis, labio superiore integro, inferiore tridentato.* Hort. Cliff. 499. Lupine with alternate Empalements having no Appendages, and the upper Lip entire, but the under cut into 3 Parts. *Lupinus sativus, flore albo.* C. B. P. 347. Garden or manured Lupine, with a white Flower.

6. *LUPINUS calycibus alternis inappendiculatis, labio superiore emarginato, inferiore integro.* Lin. Sp. Pl. 721. Lupine with alternate Empalements having no Appendages, the upper Lip indented, and the under entire. *Lupinus caeruleus, minor perennis, Virginianus, repens.* Mor. Hist. 2. p. 87. Smaller perennial, creeping, blue Lupine of Virginia.

The 1st Sort grows naturally among the Corn in the South of France and Italy, and in great Abundance in Sicily. This is an annual Plant, which rises with a firm, strait, channeled Stalk near 3 Feet high, divided toward the Top into several Branches, garnished with Hand-shaped Leaves, composed of 5, 6, or 7 oblong Lobes, which join in one Center at their Base, and are hairy. The Flowers are produced in Spikes at the End of the Branches, standing half round the Stalk in a Sort of Whorls; they are of a light blue Colour, shaped like those of Peas, and are succeeded by strait taper Pods with 1 Cell, inclosing a Row of roundish Seeds. This Sort flowers in June and July, and the Seeds ripen in the Autumn.

It is propagated in the Borders of the Pleasure Garden for Ornament, by sowing the Seeds in April in the Places where they are to remain, and when the Plants come up they should be thinned where they are too close, and kept clean from Weeds, which is all the Culture they require.

The 2d Sort has much the Appearance of the first, but the Stalks rise higher; the Leaves have more Lobes, and stand on longer Foot Stalks; the Lobes are blunt pointed, and the Seeds are variegated. This requires the same Culture is the first, and flowers at the same Time.

The 3d Sort is the common yellow Lupine, which has been long cultivated in the English Gardens, for the Sweetness of its Flowers. This grows naturally in Sicily; it rises about a Foot high with a branching Stalk, garnished with Hand-shaped Leaves, composed of 9 narrow hairy Lobes, which join at their Base to the Foot Stalks; these are 4 or 5 Inches long. The Flowers are yellow, and are produced in loose Spikes at the End of the Branches, standing in Whorls round the Stalks, with Spaces between them, terminated by 3 or 4 Flowers, sitting close at the Top; these are succeeded by flattish hairy Pods about 2 Inches long, standing erect, inclosing 4 or 5 roundish Seeds a little compressed on their Side, of a yellowish white, variegated with dark Spots. This Sort flowers at the same Time as the former, but to have a Succession of the Flowers, the Seeds are sown at different Times, viz. in April, May, and June, but those only which are first sown, will ripen their Seeds. It may be cultivated in the same Manner as the two former, and is equally hardy.

The 4th Sort is supposed to be a Native of India, but has been many Years in the English Gardens. It is an

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annual Plant, which rises with a strong, firm, channeled Stalk, from 3 to 4 Feet high, covered with a soft brownish Down, dividing upward into several strong Branches; these are garnished with Hand-shaped Leaves, composed of 9, 10, or 11 Wedge-shaped hairy Lobes, which are narrow at their Base where they join the Foot Stalk, but enlarge upward, and are rounded at the Top where they are broadest; the Foot Stalks of the Leaves are 3 or 4 Inches long. The Flowers are placed in Whorls round the Stalks above each other, forming a loose Spike, which proceeds from the End of the Branches; they are large and of a beautiful blue Colour, but have no Scent. These appear in July, and the Seeds ripen in the Autumn. The Pods of this Sort are large, almost an Inch broad and 3 Inches long, inclosing three large roundish Seeds compressed on their Sides, very rough and of a purplish brown Colour. There is a Variety of this with Flesh-coloured Flowers, which is commonly called the Rose Lupine; it differs from the blue only in the Colour of the Flower, but this Difference is permanent, for neither of the Sorts vary.

This is generally late in the ripening of the Seeds, so that unless the Autumn proves warm and dry they do not ripen; therefore the best Way to have good Seeds, is to sow them in September close to a warm Wall on dry Ground, where they will live through our ordinary Winters; and these Plants will flower early the following Summer, so there will be Time for the Seeds to ripen before the Rains fall in the Autumn, which frequently causes the Seeds to rot which are not ripe. If a few of the Seeds of both these Varieties, are sown in small Pots the Beginning of September, and when the Frosts begin, the Pots removed into a common hot Bed Frame, where they may be protected from hard Frost, but enjoy the free Air in mild Weather, the Plants may be so secured, and in the Spring they may be shaken out of the Pots, preserving the Earth to their Roots, and planted in a warm Border, where they will flower early, and produce very good Seeds.

The 5th Sort grows naturally in the Levant, but is cultivated in some Parts of Italy, as other Pulse for Food. This hath a thick upright Stalk about 2 Feet high, which divides toward the Top into several smaller Branches; these are hairy, and garnished with Hand shaped Leaves, composed of 7 or 8 narrow oblong Lobes, which are hairy and join at their Base, of a dark grayish Colour, and have a silvery Down. The Flowers are produced in loose Spikes at the End of the Branches, they are white, and sit close to the Stalk; these are succeeded by hairy strait Pods about 3 Inches long, a little compressed on the Sides; these contain 5 or 6 flattish Seeds which are white, having a little Cavity like a Navel, in that Part which is fixed to the Pod. This Sort flowers in July, and the Seeds ripen in Autumn. It is an annual Plant, which is cultivated for Ornament in the Pleasure Garden. The Seeds must be sown in the Places where the Plants are to remain, and may be treated as the first Sort.

The 6th Sort grows naturally in Virginia, and other of the northern Parts of America. This hath a perennial creeping Root, from which arise several erect channeled Stalks a Foot and a Half high, sending out 2 or 3 small

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Side Branches; these are garnished with Hand shaped Leaves, composed of 10 or 11 Spear-shaped Lobes, which join at their Base; these stand on very long Foot Stalks, and have a few Hairs on their Edges. The Flowers grow in long loose Spikes, which terminate the Stalks, and are placed without Order on every Side the Stalk; they are of a pale blue Colour, and stand on short Foot Stalks. These appear in June, and the Seeds ripen in August, which are soon scattered if they be not gathered; for after a little Moisture, the Sun causes the Pods to open with an Elasticity, and cast out the Seeds to a Distance all round. This Sort is propagated by Seeds as the former, which should be sown where the Plants are to remain; for although the Root is perennial, yet it runs so deep into the Ground, that it cannot be taken up entire; and if the Root is cut or broken, the Plant never thrives well after. I have traced some of the Roots of this Plant, which have been 3 Feet deep in the Ground in one Year from Seed; they also spread out far on every Side, so that they must have Room, therefore the young Plants should not be left nearer than 3 Feet. If this Plant is in a light dry Soil, the Roots will continue several Years, and produce many Spikes of Flowers; and although the usual Season of flowering is in June and July, yet when Rain happens to fall in August, there are frequently fresh Stalks arise from the Roots, which flower the End of September, or beginning of October.

The Seeds of the 5th Sort are used in Medicine, they have a bitter Taste, so open, digest, dissolve, and cleanse; and if they are steeped in Water for some Days till they have lost their Bitterness, they may be eaten out of Necessity, but they are supposed to breed gross Humours, and are hard of Digestion. Some Women use the Flower of the Seed mixed with the Juice of Lemons, and a little *Alumen saccharinum*, made into the Form of soft Ointment, to make the Face smooth, and look more amiable.

The small blue Lupine is frequently sown in Italy, to dress and manure the Ground, especially that which is intended for Vineyards; where, if they have Time, the Ground is sown with Lupines, which grow till they begin to flower; then they cut them down and plough them into the Ground, where the Stalks rot with the Winter's Rain; but it is doubtful whether this is any real Benefit to the Ground, for there are few Plants which draw and impoverish Ground so much as Lupines; therefore the Dressing they yield, is scarce an Equivalent for what they have drawn from the Ground: But when there is not Time for this Operation, they parboil the Seeds to prevent their growing, and sow them on the Ground before it is ploughed, allowing 16 Bushels to an Acre of Land, and this dressing is preferable to the former.

All the Sorts of Lupines make a pretty Appearance when they are in flower, but the yellow Sort is preferred for its Sweetness, though the Flowers of this are of short Duration, especially in warm Weather; therefore the Seeds of this should be sown at several Times, that there may be a Succession of Flowers through the Season, for they will continue flowering till they are stopped by hard Frost; and those which flower in Autumn will continue in Beauty a longer Time than the early ones. If some of these Seeds are sown in Autumn on a warm Border, the

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Plants will often live through the Winter, and flower early in the Spring.

LUPULUS, *Tourn. Inst. R. H.* 535. *Tab.* 309. *Humulus, Lin. Gent. Pl.* 989. The Hop; in French *Houblon*.

The Characters are,

The male and female Flowers are on different Plants. The Emplacement of the male Flower, is composed of 5 small concave obtuse Leaves; it hath no Petal, but 5 short hairy Stamina; terminated by oblong Summits. The female Flowers have a general four pointed acute Perianthium, and a separate oval one of 4 Leaves, including 8 Flowers; each of these have an Emplacement of 1 Leaf, closed at the Base. These have neither Petal or Stamina, but a small Germen situated in the Center, supporting 2 Awl-shaped Styles, crowned by acute reflexed spreading Stigmas. The Germen turns to a roundish Seed covered with a thin Skin, inclosed in the Base of the Emplacement.

We have but one Species of this Genus, viz.

LUPULUS mas et femina. *C. B. P.* 298. Male and female Hop.

The male Hop grows wild by the Side of Hedges and on Banks, in many Parts of England; the young Shoots of these Plants are often gathered by the poor People, and boiled as an esculent Herb, but these must be taken very young, otherwise they are tough and stringy. This Sort is easily distinguished by the Flowers, which are small, and hang in long loose Bunches from the Side of the Stalks, abounding with Farina on their Summits; these have no Hops succeeding to the Flowers.

The female Hop is the Sort which is cultivated for Use; of this Sort, the People who cultivate them reckon three different Varieties: As first, the long and square Garlick Hop, the long white Hop, and the oval Hop, all which are indifferently cultivated in England, but of the male Hop there is no different Varieties.

There being the greatest Plantation of Hops in Kent that are in any Country of England, it is very probable, that their Method of planting and ordering them should be the best.

As for the Choice of their Hop Grounds, they esteem the richest and strongest Grounds as the most proper; they choose a warm dry Soil, that has a good Depth of Hazel Mould; and if it be rocky within two or three Feet of the Surface, the Hops will prosper well; but they will by no Means thrive on a stiff Clay, or spongy wet Land.

If it may be, choose a Piece of Meadow or lay Ground to plant Hops on, such as has not been tilled or sown for many Years, or an old decayed Orchard; for Land that is worn out by long bearing of Corn, will require abundance of Dung, to bring it into any tolerable Condition to bear a Crop of Hops.

The Kentish Planters accounting new Land best for Hops, they plant their Hop Gardens with Apple Trees at a large Distance, and with Cherry Trees between; and when the Land hath done its best for Hops, which they reckon it will in about 10 Years, the Trees may begin to bear. The Cherry Trees last about 30 Years, and by that Time the Apple Trees are large, they cut down the Cherry Trees.

The Essex Planters account a moory Land the properest for Hops, though there are several other Sorts of Soil that are esteemed very good.

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Some account that Land that has a rosselly Top, and a Brick earth Bottom, the best ; a true Rossel or light Sand, is what they generally plant in, whether it be white or black.

Moory Land is of different Sorts, some being fixed and heavy, so as to crack in Summer ; and some so light, that in dry Seasons it will blow away with the Wind ; and some are of a middle Consistence, being composed of both.

These Moors for Goodness and Value, are according to the Nature and Goodness of the Soil that is underneath them ; which being flung up upon the Surface, will make a very good Mixture, it being best to fling the under Soil downward for Hops ; because they naturally root downwards, sometimes 4 or 5 Yards deep, and therefore the deepest and richest Soil is best for them.

Few are acquainted with the Value of Moors, because they do not search into the Bottom of them, by Reason of the Expensiveness of doing it, and the Difficulty of carrying off the Water.

If the Land be moist, it ought to be laid up in high Ridges, and to be well drained, and the Drains kept clear and open, especially in Winter, that the Water do not rot or too much chill the Roots.

If the Land be four or cold, it will be very much helped by burning it ; and if the Haulm and Strings of the Hops be burnt every Year, and some of this Paring or Sides of the Garden or other Earth be laid on them as they burn, and then more Haulm be laid over that, and so continued Layer upon Layer, it will make an excellent Compost to make the Hills with.

As to the Situation of a Hop Ground, one that inclines to the South or West is the most eligible ; but if it be exposed to the North East or South West Winds, there should be a Shelter of some Trees at a Distance ; because the North East are apt to nip the tender Shoots in the Spring, and the South West frequently break and blow the Poles at the latter End of the Summer, and very much endanger the Hops.

Hops require to be planted in an open Situation, that the Air may freely pass round and between them, to dry up and dissipate the Moisture, whereby they will not be so subject to Fire Blasts, which often destroy the Middles of large Plantations, while the Outfides remain unhurt.

As for the Preparation of the Ground for planting, it should, the Winter before, be ploughed and harrowed even ; and then lay upon it in Heaps, a good Quantity of fresh rich Earth, or well rotted Dung and Earth mixed together, sufficient to put half a Bushel in every Hole to plant the Hops in, unless the natural Ground be very fresh and good.

Then lay a Line across it from the Hedge, in which Knots have been tied, at the Distance you design your Hop Hills to be at, about 8 or 9 Feet Distance the whole Length of the Ground, and place a sharp pointed Stick at every Knot ; then lay aside the Line, and with two forked Sticks of about 8 or 9 Feet long, you may from the 1st Row set out the whole Ground, by applying the 2 Forks to 2 of the Sticks which were first set up, and placing another Row at the Ends where the forked Sticks meet triangular-wise ; then you should dig a Hole at every Stick

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about a Foot and a Half wide, and fill it full of the good Earth you brought in.

If you plough the Ground with Horses between the Hills, it will be best to plant them in Squares Chequer-wise ; but the *Quincunx* Form is the most beautiful, and it will also be better for the Hop ; but if the Ground be small, that it may be done with the Breast Plough or Spade, it will do very well ; but which Way soever you make Use of, a Stake should be stuck down at all the Places where the Hills are to be made.

Persons ought to be very curious in the Choice of the Plants and Sets, as to the Kind of Hop ; for if the Hop Garden be planted with a Mixture of several Sorts of Hops that ripen at several Times, it will cause a great deal of Trouble, and be a great Detriment to the Owner.

The two best Sorts are the white and the gray Bind ; the latter is a large square Hop, more hardy, and is the more plentiful Bearer, and ripens later than the former.

There is also another Sort of the white Bind, which ripens a Week or ten Days before the common ; but this is tenderer and a less plentiful Bearer, but it has this Advantage, it comes first to Market.

But if three Grounds, or three distant Parts of one Ground, be planted with these three Sorts, there will be this Conveniency, that they may be picked successively as they become ripe.

The Sets ought to be procured out of Grounds that are entirely of the same Sort you would have, they should be 5 or 6 Inches long, with three or more Joints or Buds on them, all the old Bind and hollow Part of the Set being cut off.

If there be a Sort of Hop you value, and would increase Plants and Sets from, the superfluous Binds may be laid down when the Hops are tied, cutting off the Tops, and burying them in the Hill ; or when the Hops are dressed, all the Cuttings may be saved, and laid in Rows in a Bed of good Earth ; for almost every Part will grow, and become a good Set the next Spring.

Some have tried to raise a Hop Ground by sowing Seeds, but that turns to no Account, because that Way is not only tedious, but the Hops so produced are commonly of different Kinds, and many of them wild and barren.

As to the Seasons of planting Hops, the *Kentish* Planters best approve the Months of *October* and *March*, both which succeed very well ; but the common Sets are not to be had in *October*, unless from some Ground that is to be dug up and destroyed ; and likewise there is some Danger that the Sets may be rotted, if the Winter prove very wet ; but the most usual Time of procuring them is in *March*, when the Hops are cut and dressed.

As to the Manner of planting the Sets, you should put 5 good Sets in every Hole with a setting Stick ; one is to be placed in the Middle, and the rest round about sloping, the Tops meeting at the Center ; they must stand even with the Surface of the Ground ; let them be pressed close with the Hand, and covered with fine Earth, and a Stick should be placed on each Side the Hill, to secure it.

The Ground being thus planted, all that is to be done more that Summer, is to keep the Hills clear from Weeds,

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Weeds, and to dig up the Ground about the Month of *May*, and to gather up the Stones, if more are turned up by digging, to raise a small Hill round about the Plants; and in *June* you must twist the young Binds or Branches together into a Bunch or Knot, for if they are tied up to small Poles, the first Year, in order to have a few Hops from them, it will not countervail the weakening of the Plants.

A Mixture of Compost or Dung being prepared for your Hop Ground, the best Time for laying it on, if the Weather prove dry, is about *Michaelmas*, that the Wheels of the Dung Cart may not injure the Hops, nor furrow the Ground: If this be not done then, you must be obliged to wait till the Frost has hardened the Ground, so that it will bear the Dung Cart; and this is also the Time to carry on your new Poles, to recruit those that are decayed, and to be cast out every Year.

If you have good Store of Dung, the best Way will be to spread it in the Alleys all over the Ground, and to dig it in the Winter following. The Quantity they will require, will be 40 Loads to an Acre, reckoning about 30 Bushels to the Load.

If you have not Dung enough to cover all the Ground in one Year, you may lay it on one Part one Year, and on the rest in another, or a third; for there is no Occasion to dung the Ground after this Manner, oftener than once in three Years.

Those who have but a small Quantity of Dung, usually content themselves with laying on about 20 Loads on an Acre every Year; this they lay only on the Hills, either about *November*, or in the Spring; which last some account the best Time, when the Hops are dressed, to cover them after they are cut; but if it be done at this Time, the Compost or Dung ought to be very well rotted and fine.

As to the dressing the Hops, when the Hop Ground is dug in *January* or *February*, the Earth about the Hills, and very near them, ought to be taken away with a Spade, that you may come the more conveniently at the Stock to cut it.

About the End of *February*, if the Hops were planted the Spring before, or if the Ground be weak, they ought to be dressed in dry Weather; but else, if the Ground be strong and in Perfection, the Middle of *March* will be a good Time; and the latter End of *March*, if it be apt to produce over-rank Binds, or the Beginning of *April*, may be soon enough.

Then having with an Iron Picker cleared away all the Earth out of the Hills, so as to make the Stock bear to the principal Roots, with a sharp Knife you must cut off all the Shoots which grew up with the Binds the last Year; and also all the young Suckers, that none be left to run in the Alley and weaken the Hill. It will be proper to cut one Part of the Stock lower than the other, and also to cut that Part low, that was left highest the preceding Year. By pursuing this Method, you may expect to have stronger Buds, and also keep the Hill in good Order.

In dressing those Hops that have been planted the Year before, you ought to cut off both the dead Tops, and the young Suckers which have sprung up from the Sets, and also to cover the Stocks with a Hive with fine Earth a Finger's Length in Thickness.

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About the Middle of *April* the Hops are to be poled, when the Shoots begin to sprout up; the Poles must be set to the Hills deep into the Ground, with a square Iron Pitcher or Crow, that they may the better endure the Winds; three Poles are sufficient for one Hill. These should be placed as near the Hills as may be, with their bending Tops turned outwards from the Hill, to prevent the Binds from entangling; and a Space between two Poles ought to be left open to the South, to admit the Sun Beams.

The Poles ought to be in Length 16 or 20 Feet, more or less, according as the Ground is in Strength; and great Care is to be taken not to overpole a young or weak Ground, for that will draw the Stock too much, and weaken it. If a Ground be overpoled, you are not to expect a good Crop from it; for the Branches which bear the Hops will grow very little, till the Binds have overreached the Poles, which they cannot do when the Poles are too long. Two small Poles are sufficient for a Ground that is young.

If you wait till the Sprouts or young Binds are grown to the Length of a Foot, you will be able to make a better Judgment where to Place the largest Poles; but if you stay till they are so long as to fall into the Alleys, it will be injurious to them, because they will entangle one with another, and will not clasp about the Pole so readily.

Maple or Aspen Poles are accounted the best for Hops, on which they are thought to prosper best, because of their Warmth; or else, because the climbing of the Hop is furthered by Means of the Roughness of the Bark. But for Lastingness, Ashen or Willow Poles are preferable; but Chestnut Poles are the most durable of all.

If, after the Hops are grown up, you find any of them have been under-poled, taller Poles may be placed near those that are too short, to receive the Binds from them.

As to the tying of Hops, the Buds that do not clasp of themselves to the nearest Pole when they are grown to three or four Feet high, must be guided to it by the Hand, turning them to the Sun, whose Course they will always follow. They must be bound with withered Rushes, but not so close as to hinder them from climbing up the Pole.

This you must continue to do till all the Poles are furnished with Binds, of which, two or three are enough for a Pole; and all the Sprouts and Binds that you have no Occasion for are to be plucked up; but if the Ground be young, then none of these useless Binds should be plucked up, but should be wrapt up together in the Middle of the Hill.

When the Binds are grown beyond the Reach of your Hands, if they forsake the Poles, you should make use of a Stand Ladder in tying them up.

Some advise, that if the Binds be very strong, and overgrow the Poles very much, you strike off their Heads with a long Switch, to increase their branching below.

Towards the latter End of *May*, when you have made an End of tying them, the Ground must have the Summer digging; this is done by casting up with the

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Spade some fine Earth into every Hill, and a Month after this is done, you must pare the Alleys with a Shovel, and make the Hills up to a convenient Bigness.

It is not at all to be doubted, but that a thorough Watering would be of very great Advantage to Hops in a hot dry Summer; but it is so much Charge and Trouble to do this, that unless you have a Stream at Hand to flow the Ground, it is scarce practicable.

When the Hops blow, you should observe if there be any wild barren Hills among them, and mark them, by driving a sharpened Stick into every such Hill, that they may be digged up and replanted.

Hops, as well as other Vegetables, are liable to Distempers and Disasters, and among the rest, to the Fen.

The Rev. Dr. Hales, in his excellent Treatise of *Vegetable Statics*, treating of Hops, gives us the following Account of the State of Hops in *Kent*, in the Year 1725, that he received from Mr. *Austen* of *Canterbury*, which is as follows:

In mid *April* not half the Shoots appeared above Ground, so that the Planters knew not how to pole them to the best Advantage.

This Defect of the Shoot, upon opening the Hills, was found to be owing to the Multitude and Variety of Vermin that lay preying upon the Roots; the Increase of which was imputed to the long and almost uninterrupted Series of dry Weather for three Months before. Towards the End of *April*, many of the Hop Vines were infested with Flies.

About the 20th of *May* there was a very unequal Appearance, some Vines being run 7 Feet, others not above three or four; some just tied to the Poles, and some not visible; and this disproportionate Inequality in their Size, continued through the whole Time of their Growth.

The Flies now appeared upon the Leaves of the forwardest Vines, but not in such Numbers here, as they did in most other Places. About the Middle of *June* the Flies increased, yet not so as to endanger the Crop; but in distant Plantations they were exceedingly multiplied, so as to swarm towards the End of the Month.

June the 27th some Specks of Fen appeared. From this Day to the 9th of *July* was very dry Weather. At this Time, when it was said, that the Hops in most Parts of the Kingdom looked black and sickly, and seemed past Recovery, ours held it out pretty well, in the Opinion of the most skilful Planters.

The great Leaves were indeed discoloured, and a little withered, and the Fen was somewhat increased. From the 9th of *July* to the 23d, the Fen increased a great deal; but the Flies and Lice decreased, it raining much daily. In a Week more, the Fen which seemed to be almost at a Stand, was considerably increased, especially in those Grounds where it first appeared.

About the Middle of *August* the Vines had done growing both in Stem and Branch, and the forwardest began to be in the Hop, the rest in Bloom; the Fen continued spreading where it was not before perceived; and not only the Leaves, but many of the Burs were also tainted with it.

About the 20th of *August* some of the Hops were infested with the Fen, and whole Branches corrupted by it. Half the Plantations had pretty well escaped hitherto, and

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from this Time the Fen increased but little; but several Days Wind and Rain the following Week to distorted them, that many of them began to dwindle, and at last came to nothing; and of those that then remained in Bloom, some never turned to Hops; and of the rest which did, many of them were so small, that very little exceeded the Bigness of a good thriving Bur.

We did not begin to pick till the 8th of *September*, which is eighteen Days later than we began the Year before; the Crop was little above two hundred on an Acre round, and not good. The best Hops sold this Year at *Way-bill*, for 16 l. the Hundred.

The Rev. Dr. Hales, in his aforesaid Treatise, gives us an Account of the following Experiment that he made on Hop Vines. He tells us, That in *July* he cut off two thriving Hop Vines near the Ground, in a thick shady Part of the Garden, the Pole still standing; he stripped the Leaves off from one of these Vines, and set their Stems in known Quantities of Water in little Bottles; that with Leaves imbibed in a twelve Hours Day four Ounces, and that without Leaves three Fourths of an Ounce.

He took another Hop Pole with its Vines on it, and carried it out of the Hop Ground into a free and open Exposure; these imbibed and perspired as much more as the former in the Hop Ground, which is, doubtless, the Reason why the Hop Vines on the Outfides of Gardens, where they are most exposed to the Air, are short and poor, in Comparison of those in the Middle of the Ground, viz. because being much dried, their Fibres harden sooner, and therefore they cannot grow so kindly as those in the Middle of the Ground, which, by Shade, are always kept moister, and more ductile.

The same curious Author proceeds as followeth: Now there being 1000 Hills in an Acre of Hop Ground, and each Hill having three Poles, and each Pole three Vines, the Number of Vines will be 9000, each of which perspiring four Ounces, the Sum of all the Ounces perspired by an Acre in twelve Hours Day will be 36000 Ounces = 15750000 Grains = 62007 Cube Inches, or 220 Gallons, which divided by 6272640, the Number of square Inches in an Acre, it will be found, that the Quantity of Liquor perspired by all the Hop Vines will be equal to an Area of Liquor as broad as an Acre, and $\frac{1}{15}$ Part of an Inch deep, besides what evaporated from the Earth.

And this Quantity of Moisture, in a kindly State of the Air, if daily carried off, is a sufficient Quantity to keep the Hops in a healthy State; but in a rainy moist State of Air, without a due Mixture of dry Weather, too much Moisture hovers about the Hops, so as to hinder, in some Measure, the kindly Perspiration of the Leaves, whereby the stagnating Sap corrupts, and breeds mouldy Fen, which often spoils vast Quantities of flourishing Hop Grounds.

This was the Case in the Year 1723, when for ten or fourteen Days almost continual Rains fell, about the latter half of *July*, after four Months dry Weather, upon which the most flourishing and promising Hops were all infected with Mould, or Fen, in their Leaves and Fruit, while the then poor and unpromising Hops escaped and produced Plenty, because they, being small, did not perspire so great a Quantity as others, nor did they

they confine the perspired Vapour, so much as the large thriving Vines did in their shady Thickets.

This Rain on the then warm Earth, made the Grass shoot out as fast as if it were in a hot Bed, and the Apples grew so precipitately, that they were of a fleshy Constitution, so as to rot more remarkably than had ever been remembered.

The Planters observe, That when a Mould, or Fen, has once seized any Part of the Ground, it soon runs over the Whole, and that the Grass, and other Herbs under the Hops, are infected with it, probably, because the small Seeds of this quick-growing Mould, which soon come to Maturity, are blown over the whole Ground, which spreading of the Seed may be the Reason why some Grounds are infected with Fen for several Years successively, viz. from the Seeds of the last Year's Fen. Might it not then be advised to burn the fenny Hop Vines, as soon as the Hops are picked, in hopes thereby to destroy some of the Seed of the Mould?

Mr. *Austen* of *Canterbury*, observes Fen to be more fatal to those Grounds that are low and sheltered, than to the high and open Grounds, to those that are shelving to the North, than to those shelving to the South; to the Middle of Grounds, than to the Outfides; to the dry and gentle Grounds, than to the moist and stiff Grounds.

This was very apparent throughout the Plantations where the Land had the same Workmanship and Help bestowed upon it, and was wrought at the same Time. But if in either of these Cases there was a Difference, it had a different Effect, and the low and gentle Grounds, that lay neglected, were then seen less disordered than the open and moist, which were carefully managed and looked after.

The Honey Dews are observed to come about the 11th of *June*, which, by the Middle of *July*, turn the Leaves black, and make them stink.

The said Dr. *Hales* relates, That in the Month of *July* (the Season for Fire Blasts, as the Planters call them) he has seen the Vines in the Middle of the Hop Ground scorched up almost from one End of a large Ground to the other, when a hot Gleam of Sun-shine has come immediately after a Shower of Rain, at which Time Vapours are all seen with the naked Eye, but especially with reflecting Telescopes, to ascend so plentifully as to make a clear and distinct Object, become immediately very dim and tremulous; nor was there any dry gravelly Vein in the Ground along the Course of this Scorch; it was therefore, probably, owing to the much greater Quantity of scorching Vapours in the Middle, than the Outfides of the Ground, and that being a denser Medium, it was much hotter than a more rare Medium.

And, perhaps, the great Volume of ascending Vapours might make the Sun Beams converge a little towards the Middle of the Ground, that being a denser Medium, and thereby increase the Heat considerably; for he observed, That the Course of the scorched Hops was in Lines at right Angles to the Sun Beams about Eleven o'Clock, at which Time the hot Gleam was.

The Hop Ground was in a Valley which ran from South West to North East, and to the best of his Remembrance, there was but little Wind, and that in the Course of the Scorch; but had there been some other gentle Wind, either North or South, it is not improba-

ble but that the North Wind gently blowing the Volume of rising Wreak on the South Side of the Ground, that Side might have been most scorched, and so *vice versa*.

As to particular Fire Blasts, which scorch here and there a few Hop Vines, or one or two Branches of a Tree, without damaging the next adjoining, what Astronomers observe, may hint to us no very improbable Cause of it, viz. They frequently observe (especially with reflecting Telescopes) small separate Portions of pellucid Vapours floating in the Air, which, though not visible to the naked Eye, are yet considerably denser than the circumambient Air; and Vapours of such a Degree of Density may very probably either acquire such a scalding Heat from the Sun, as will scorch what Plants they touch, especially the more tender.

(An Effect which the Gardeners about *London* have too often found, to their Cost, when they have incautiously put Bell Glasses over their Cauliflowers early in a frosty Morning, before the Dew was evaporated off them, which Dew, being raised by the Sun's Warmth, and confined within the Glass, did there form a dense, transparent, scalding Vapour, which burned and killed the Plants.)

Or, perhaps, the upper or lower Surface of these transparent separate flying Volumes of Vapours, may, approach so near to an Hemisphere, or Hemicylinder, as thereby to make the Sun Beams converge, so as often to scorch the more tender Plants they shall fall on, and sometimes also Parts of the more hardy Plants and Trees, in Proportion to the greater or lesser Convergency of the Sun's Rays.

The learned *Boerhaave*, in his *Theory of Chymistry*, p. 245, observes, That those white Clouds which appear in Summer Time, are, as it were, so many Mirrors, and occasion excessive Heat. These cloudy Mirrors are sometimes round, sometimes concave, polygonous, &c. When the Face of Heaven is covered with such white Clouds, the Sun shining among them, must, of Necessity, produce a vehement Heat, since many of his Rays, which would otherwise, perhaps, never touch our Earth, are hereby reflected to us. Thus, if the Sun be on one Side, and the Clouds on the opposite one, they will be perfect Burning Glasses, and hence the Phenomena of Thunder.

I have sometimes (continues he) observed a Kind of hollow Clouds full of Hail and Snow, during the Continuance of which the Heat was extreme, since, by such Condensation, they were enabled to reflect more strongly. After this came a sharp Cold, and then the Clouds discharged their Hail in great Quantity, to which succeeded a moderate Warmth. Frozen concave Clouds, therefore, by their great Reflexions, produce a vigorous Heat, and the same, when resolved, excessive Cold.

From which the Rev. Dr. *Hales* observes as follows: Hence we see, that Blasts may be occasioned by the Reflexions of the Clouds, as well as by the above-mentioned Refraction of dense transparent Vapours.

About the Middle of *July* Hops begin to blow, and will be ready to gather about *Bartholomew Tide*. A Judgment may be made of their Ripeness, by their strong Scent, their Hardness and the brownish Colour of their Seed.

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When by these Tokens they appear to be ripe, they must be picked with all the Expedition possible, for if at this Time a Storm of Wind should come, it would do them great Damage, by breaking the Branches, and bruising and discolouring the Hops; and it is very well known, that Hops, being picked green and bright, will sell for a third Part more than those which are discoloured and brown.

The most convenient Way of picking them is into a long square Frame of Wood, called a Bin, with a Cloth hanging on Tenter Hooks within it, to receive the Hops as they are picked.

The Frame is composed of four Pieces of Wood joined together, supported by four Legs, with a Prop at each End to bear up another long Piece of Wood, placed at a convenient Height over the Middle of the Bin; this serves to lay the Poles upon, which are to be picked.

This Bin is commonly eight Feet long, and three Feet broad; two Poles may be laid on it at a Time, and six or eight Persons may work at it, three or four on each Side.

It will be best to begin to pick the Hops on the East or North Side of your Ground, if you can do it conveniently; this will prevent the South West Wind from breaking into the Garden.

Having made Choice of a Plot of the Ground containing eleven Hills square, place the Bin upon the Hill which is in the Center, having five Hills on each Side; and when these Hills are picked, remove the Bin into another Piece of Ground of the same Extent, and so proceed till the whole Hop Ground is finished.

When the Poles are drawn up to be picked, you must take great Care not to cut the Binds too near the Hills, especially when the Hops are green, because it will make the Sap to flow excessively.

And if the Poles do not come up without Difficulty, they should be raised by a Piece of Wood in the Nature of a Lever, having a forked Piece of Iron with Teeth on the Inside, fastened within two Feet of the End.

The Hops must be picked very clean, *i. e.* free from Leaves and Stalks, and, as there shall be Occasion, two or three Times in a Day the Bin must be emptied into a Hop Bag made of coarse Linen Cloth, and carried immediately to the Oast, or Kiln, in order to be dried; for if they should be long in the Bin, or Bag, they will be apt to heat, and be discoloured.

If the Weather be hot, there should no more Poles be drawn than can be picked in an Hour, and they should be gathered in fair Weather, if it can be, and when the Hops are dry; this will save some Expence in Firing, and preserve their Colour better than when they are dried.

The best Method of drying Hops is with Charcoal on an Oast, or Kiln, covered with Hair-Cloth, of the same Form and Fashion that is used for drying Malt. There is no Need to give any particular Directions for the making it, since every Carpenter, or Bricklayer, in those Countries where Hops grow, or Malt is made, knows how to build them.

The Kiln ought to be square, and may be of ten, twelve, fourteen, or sixteen Feet over at the Top, where the Hops are laid, as your Plantations requires, and your Room will allow. There ought to be a due Pro-

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portion between the Height and the Breadth of the Kiln, and the Beguels of the Steddle where the Fire is kept, *viz.* if the Kiln be twelve Feet square on the Top, it ought to be nine Feet high from the Fire, and the Steddle ought to be six Feet and a Half square, and so proportionable in other Dimensions.

The Hops must be spread even upon the Oast a Foot thick or more, if the Depth of the Curb will allow it, but Care is to be taken not overload the Oast, if the Hops be green or wet.

The Oast ought to be first warmed with a Fire before the Hops are laid on, and then an even steady Fire must be kept under them; it must not be too fierce at first, lest it scorch the Hops; nor must it be suffered to sink or slacken, but rather be increased till the Hops be nearer dried, lest the Moisture, or Sweat, which the Fire has raised, fall back, or discolour them. When they have lain about nine Hours, they must be turned, and in two or three Hours more they may be taken off the Oast. It may be known when they are well dried, by the Brittleness of the Stalks, and the easy falling off of the Hop Leaves.

The Dutch and Flemings have another Method of drying their Hops: They make a square Kiln, or Room, about eight or ten Feet wide, built of Brick or Stone, having a Door at one Side, and a Fire-Place in the Middle of the Room, on the Floor, about thirteen Inches wide within, and thirteen Inches high in Length from the Mouth of it, almost to the back Part of the Kiln, a Passage being left just enough for a Man to go round the End of it; this they call a Horse, such as is commonly made in Malt Kilns, the Fire passing out at the Holes at each Side; and at the End of it.

The Bed, or Floor, on which the Hops lie to be dried, is placed about five Feet high above; about that is a Wall, near four Feet high, to keep the Hops from falling.

A Window is made at one Side of the upper Bed, to shove off the dry Hops down into a Room prepared to receive them. The Beds are made of Laths, or Rails, sawn very even, lying a Quarter of an Inch distant from one another, with a Cross Beam in the Middle, to support them; the Laths are let in even with the Top of the Beam, and this keeps them even in the Places; this they call an Oast.

The Hops are laid on this Bed by Baskets full, without any Oast Cloth, beginning at one End, and so going on till all is covered half a Yard thick, without treading them, then they even them with a Rake, that they may lie of equal Thickness.

This being done, they kindle the Fire below, either of Wood or Charcoal, but the latter is accounted the better Fuel for Hops; this Fire is kept as much as may be at an equal or constant Heat, and only at the Mouth of the Furnace, for the Air will sufficiently disperse it.

They do not stir them till they are thoroughly dried, *i. e.* till the Top is as fully dried as the Bottom, but if they find any Place not to be so dry as the rest (which may be known by reaching over them with a Stick or Wand, and touching them in several Places,) they observe where they do not rattle, and where they do, and where they do not rattle, they abate them there, and dispose of them where the Places were first dry.

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They know when they are thoroughly dry, by the Brittleness of the inner Stalk, if it be short when it is rubbed, which when they find, they take out the Fire, and shove out the Hops at the Window, that is made for that Purpose, into the Room made to receive them, with a Coal-Rake made with a Board at the End of a Pole, and then go in at a Door below, and sweep up the Hops and Seeds that fall through, and put them to the other Hops, then they lay another Bed of green Hops, and renew the Fire, and proceed as before.

This Method is disapproved by some, because (they say) the Hops lying so thick, and not being turned, the under Part of them must needs dry before the upper, and the Fire passing through the whole Bed to dry the uppermost, must necessarily over-dry, and much prejudice the greatest Part of the Hops, both in Strength and Weight, besides the unnecessary Expence of Firing, which must be long continued to dry thoroughly so many together.

Therefore some have improved on this Method, and advised to make the Kiln much as is before directed as to the Dutch Way.

First to make a Bed of flat Ledges about an Inch thick, and two or three Inches broad, fawn, and laid across one another the flat Way, Chequerwise, at about three or four Inches Distance one from another, the Edges being so entered one into the other, that the Floor may be even and smooth; this Bed may be made to rest on two or three Joists, set Edgewise, to support it from sinking.

This Bed is to be covered with large double Tin, soldered together at each Joint, and the Ledges must be so ordered, before they are laid, that the Joints of the Tin may always lie over the Middle of the Ledge, the Bed being wholly covered over with Tin: Boards must be fitted about the Edges of the Kiln, to keep up the Hops, but one Side must be made to remove, that the Hops may be shoved off as before.

On this Bed, or Floor of Tin, the Hops may be turned without such Hazard, or Loss, as upon the Hair Cloth; and also it will require a less Expence of Fuel, and, besides, any Sort of Fuel will serve in this Kiln, as well as Charcoal, because the Smoke does not pass through the Hops, as it does the former Ways; but then Care is to be taken, that there be Passages made for it at the several Corners and Sides of the Kiln.

It is found, by Experience, that the turning of Hops, though it be after the most easy and best Manner, is not only an Injury and Waste to the Hops, but also an Expence of Fuel and Time, because they require as much Fuel, and as long a Time, to dry a small Quantity, by turning them, as a large one.

Now this may be prevented, by having a Cover (to be let down and raised at Pleasure) to the upper Bed whereon the Hops lie.

This Cover may also be tinned, by nailing single Tin Plates over the Face of it, so that when the Hops begin to dry, and are ready to burn, i. e. when the greatest Part of their Moisture is evaporated, then the cover may be let down within a Foot, or less, of the Hops (like a Reverberatory,) and will reflect the Heat upon them, so that the Top will soon be as dry as the lowermost, and every Hop be equally dried.

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As soon as the Hops are taken off the Kiln, lay them, in a Room for three Weeks, or a Month to cool, give, and toughen, for if they are bagged immediately, they will powder, but if they lie awhile (and the longer they lie the better, provided they be covered close with Blankets to secure them from the Air,) they may be bagged with more Safety, as not being liable to be broken to Powder in treading, and this will make them bear treading the better, and the harder they are trodden, the better they will keep.

The common Method of bagging is as follows: They have a Hole made in an upper Floor, either round or square, large enough to receive a Hop Bag (which consists of four Ells and a Half of Ell-wide Cloth, and also contains ordinarily two Hundred and a Half of Hops,) they tie a Handful of Hops in each lower Corner of the Bag, to serve as Handles to it, and they fasten the Mouth of the Hole, so placed that the Hop may rest upon the Edges of the Hole.

Then he that is to tread the Hops down into the Bag, treads the Hops on every Side, another Person continually putting them in as he treads them, till the Bag is full, which being well filled and trodden, they unrip the Fastening of the Bag to the Hops, and let it down, and close up the Mouth of the Bag, tying up a Handful of Hops in each Corner of the Mouth, as was done in the lower Part.

Hops being thus packed, if they have been well dried, and laid up in a dry Place, they will keep good several Years; but Care must be taken, that they be neither destroyed nor spoiled by the Mice making their Nests in them.

The Crop of Hops being thus bestowed, you are to provide for another, first by taking Care of the Poles against another Year, which are best to be laid up in a Shed, having first stripped off the Haulm from them; but if you have not that Conveniency, set up three Poles in the Form of a Triangle, or six Poles (as you please) wide at Bottom, and having set them into the Ground, with an Iron Pitcher, and bound them together at Top, set the rest of your Poles about them; and being thus disposed, none but those on the Outside will be subject to the Injuries of the Weather; for all the inner Poles will be kept dry, unless at the Top, whereas, if they were on the Ground they would receive more Damage in a Fortnight, than by their standing all the rest of the Year.

In the Winter Time provide your Soil and Manure for the Hop Ground against the following Spring.

If the Dung be rotten, mix it with two or three Parts of common Earth, and let it incorporate together till you have Occasion to make Use of it in making your Hop Hills, but if it be new Dung, then let it be mixed as before, till the Spring come Twelvemonths, for a new Dung is very injurious to Hops.

Dung of all Sorts was formerly more commonly made Use of than now it is, especially when rotted, and turned to Mould, and they who have no other Manure must use it; which, if they do, Cows or Hogs Dung, or human Ordure mixed with Mud, may be a proper Compost, because Hops delight most in a Manure that is cool and moist.

Some recommend Chalk, or Lime, as the best Manure, except in cold Lands, and in such, Pigeons Dung will

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will do best; a little of which laid to a Hill, and so mixed, that it may not be too hot in a Place, is of great Advantage.

LUTEOLA. See Reseda.

LYCHNIDEA. See Phlox.

LYCHNIS. Tourn. Inst. R. H. 333. Tab. 175. Lin. Gen. Pl. 517. Campion.

The Characters are,

The Flower has a permanent swollen Empalement of 1 Leaf, indented in 5 Parts at the Top. It hath 5 Petals, whose Tails are the Length of the Empalement, their upper Part plain, broad, and frequently cleft in Laminae. It hath 10 Stamina, longer than the Empalement, alternately ranged, and fastened to the Tails of the Petals, terminated by prostrate Summits. In the Center is situated an almost oval Germen, supporting 5 Awl-shaped Styles, crowned by reflexed hairy Stigmas. The Empalement afterward becomes an oval Capsule with 1 Cell, opening with 5 Valves, filled with roundish Seeds.

The Species are,

1. LYCHNIS floribus fasciculatis fastigiatis. Hort. Cliff. 174. Campion with Flowers gathered into a Pyramid. *Lychnis hirsuta, flore coccineo, major.* C. B. P. 203. Greater hairy Campion with a scarlet Flower.

2. LYCHNIS petalis integris. Lin. Sp. Pl. 436. Campion with entire Petals. *Lychnis sylvestris viscosa, rubra, angustifolia.* C. B. P. 205. Wild viscous *Lychnis* with a red Flower and narrow Leaves, commonly called the Single Catchfly.

3. LYCHNIS floribus diæcis. Hort. Cliff. 171. Campion with male and female Flowers on different Plants. *Lychnis sylvestris, fiva aquatica purpurea, simplex.* C. B. P. 204. Wood or aquatick *Lychnis* with a single purple Flower, frequently called Bachelors Button.

4. LYCHNIS floribus diæcis, calycibus inflatis hirsutis. Campion with male and female Flowers, growing on different Plants, and swollen hairy Empalements. *Lychnis sylvestris, alba, simplex.* C. B. P. 204. Wild Campion with a single white Flower.

5. LYCHNIS petalis quadrifidis, fructu subrotundo. Hort. Cliff. 174. Campion with quadrifid Petals, and a roundish Fruit. *Lychnis pratensis flore laciniato simplic.* Mor. Hist. 2. p. 537. Meadow Campion with a single jagged Flower, commonly called Ragged Robin.

6. LYCHNIS petalis bifidis corymbosis. Lin. Sp. Plant. 436. Campion with bifid Petals, and Flowers growing in a Corymbus. *Silene floribus in capitulum congestis.* Haller. Helv. 376. *Lychnis* with Flowers collected in a Head.

7. LYCHNIS petalis bifidis, caule dicotomo, foliis subbirtis. Lin. Sp. Plant. 437. Campion with bifid Petals, a Stalk divided by Pairs, and Leaves which are somewhat hairy.

8. LYCHNIS caule erecto, calycibus striatis acutis, petalis dissectis. Plat. 170. Campion with an erect Stalk, striped acute Empalements, and Petals cut into many Parts.

9. LYCHNIS calyce inflato, corollâ calyce breviora, caule subuniiflora. Lin. Sp. Pl. 437. Campion with a swollen Empalement, the Petals of the Flower shorter than the Cup, and Stalks having chiefly one Flower. *Lychnis sylvestris alba, calyce amplo vesicario.* Vaill. Wild white Campion with a large inflated Empalement.

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The 1st Sort here mentioned, is commonly known by the Title of scarlet *Lychnis*. Of which there is one with double Flowers, which is most esteemed for the Size of the Flowers and Multiplicity of the Petals; as also for the Duration of the Flowers, which continue much longer in Beauty than the single Flowers, so that the latter is not much cultivated at present, though the Flowers of this are very beautiful; and as the Plants are so easily propagated by Seed, they may soon be had in greater Plenty than those with double Flowers, which do not produce Seeds. Of the single Sort there are three Varieties, the deep Scarlet, the Flesh Colour, and the White, but the first is the most beautiful.

This is easily propagated by Seeds which should be sown on a Border exposed to the East, in the Middle of March. The Plants will appear in April, when if the Season is dry, they should be refreshed with Water two or three Times a Week. By the Beginning of June the Plants will be fit to remove, when there should be a Bed of common Earth prepared to receive them; into which they should be planted at about 4 Inches apart, observing to water and shade them till they have taken Root; after which Time they will require no other Care but to keep them clean from Weeds till the following Autumn, when they should be transplanted into the Borders of the Pleasure Garden, where they are to continue. The Summer following these Plants will flower and produce ripe Seed, but the Roots will abide several Years and continue to flower. This Sort flowers in June and July, and the Seeds ripen in Autumn. It may also be propagated by Offsets, but as the Seeds ripen so freely, few Persons trouble themselves to propagate the Plants any other Way. The French call this Plant *Jerusalem Cross*.

The Sort with double Flowers is a valuable Plant, the Flowers are very double and of a beautiful Scarlet Colour. This hath a perennial Root from which arise 2, 3, or 4 Stalks, according to the Strength of the Roots; these in rich moist Land, grow upwards of 4 Feet high, the Stalks are strong, erect, and hairy. They are garnished the whole Length with Spear-shaped Leaves sitting close to the Stalks; these are placed by Pairs opposite, and just above each Pair of Leaves there are 4 smaller Leaves standing round the Stalk: The Flowers are produced in close Clusters sitting on the Top of the Stalk; when the Roots are strong, the Clusters of Flowers will be very large, so they make a fine Appearance, the Flowers being very double and of a bright Scarlet Colour. They appear the latter End of June, and in moderate Seasons continue near a Month in Beauty. The Stalks decay in Autumn, and new ones arise in the Spring. This was originally produced from the Seeds of the single Sort, and is propagated by Slips taken from the Roots in Autumn; but as this is a slow Method of increasing the Plants, so the best Way to have them in Plenty, is to cut off the Stalks in June, before the Flowers appear, and these may be cut into small Lengths, each of which should have three Joints; these Cuttings should be planted on an East Border of Soft loamy Earth, putting two of the Joints into the Ground, leaving one Eye just level with the Surface; these must be watered, and then covered close with Bell or Hand Glasses, so as to exclude the outward Air, and shaded with

with Mats when the Sun shines hot upon them. The Cuttings so managed will put out Roots in 5 or 6 Weeks, when they must be exposed to the open Air, and in very dry Weather they should be now and then refreshed with Water, but it must not be repeated too often, nor given in large Quantities, for too much Moisture will cause them to rot. These will make good Plants by the Autumn, when they may be transplanted into the Borders of the Pleasure Garden, where they will flower the following Summer.

Some People who are covetous to have their Plants flower, suffer the Stalks to remain till the Flowers are decayed, and then cut them off to plant, but by that Time the Stalks are grown hard, so but few of them succeed, and those which do, will not be near so good Plants as those which are planted earlier, therefore it will be better to sacrifice the Flowers of some Roots for this Purpose. These Plants delight in a soft rich loamy Soil not too moist or stiff, in which they will thrive and flower very strong, but they do not care for much Dung, which very often causes the Roots to canker and rot, so that in the rich dunged Lands about London they do not thrive well. As these Plants grow tall, they should be planted in the Middle of large Borders, and not crowded with other Plants, for their Roots extend to a large Distance, so if they are incommoded by other Roots, it will stint the Growth of the Plants.

I have not seen any double Flowers of the two other Varieties, but have been informed that there are of both the White and the Flesh Colour with double Flowers in some of the French Gardens. These make a Variety, but are not so beautiful as the Scarlet, so are not much esteemed.

The 2d Sort is commonly called Red German Catchfly. This hath been found growing naturally upon the Rocks in *Edinburgh* Park, and in some Places in *Wales*. It was formerly cultivated in Flower Gardens for Ornament, but since this Sort with double Flowers hath been produced, the single has been almost banished out of the Gardens. This hath long narrow Grass-like Leaves, which come out from the Root without Order, sitting close to the Ground; between these come up strait single Stalks; which in good Ground rise a Foot and Half high, at each Joint of the Stalk come out two Leaves opposite, of the same Form as the lower, but decrease in their Size upward; under each Pair of Leaves, for an Inch in Length, there sweats out of the Stalk, a glutinous Liquor, which is almost as clammy as Birdlime, so that the Flies which happen to light upon these Places, are fastened to the Stalk where they die, from whence it had the Title of Catchfly. The Stalk is terminated by a Cluster of purple Flowers, and from the two upper Joints, come out on each Side the Stalk, a Cluster of the same Flowers, so that the whole form a Sort of loose Spike. These appear in the Beginning of *May*, and are succeeded by roundish Seed Vessels, which are full of small angular Seeds ripening in *July*.

It may be propagated in Plenty by parting the Roots in Autumn, at which Time every Slip will grow, or if the Seeds are sown as is directed for the first Sort, the Plants may be raised in Plenty. This delights in a light moist Soil and a shady Situation.

The double flowering of this Sort was accidentally ob-

tained from the Seeds of the single. This has not been known 40 Years in the *English* Gardens, but it is now so common as to have excluded that with single Flowers; it differs only from that in the double Flowers. As this never produces Seeds, so it can only be propagated by parting and slipping the Roots; the best Time for this is in Autumn, at which Time every Slip will grow. If this is performed in *September*, the Slips will have taken good Root before the Frost, and will flower well the following Summer; but if they are expected to flower strong, the Roots must not be divided into small Slips, though for multiplying the Plants it matters not how small the Slips are. These should be planted on a Border exposed to the Morning Sun, and shaded when the Sun is warm, till they have taken Root. If the Slips are planted in the Beginning of *September*, they will be rooted strong enough to plant in the Borders of the Flower Garden, by the Middle or latter End of *October*. The Roots of this Sort multiply so fast as to make it necessary to transplant and part them every Year, for when they are let remain longer, they are very apt to rot. This Sort requires the same Soil and Situation as the former.

The 3d Sort grows naturally by the Side of Ditches and in moist Pastures in many Parts of *England*, so is seldom admitted into Gardens; it hath a perennial Root, from which arise many branching diffused Stalks, from 2 to 3 Feet high, garnished with oval acute-pointed Leaves placed by Pairs at each Joint, and terminated by Clusters of purple Flowers, which appear in *April* and *May*. The male Flowers grow on separate Plants from the female. The latter produces Seeds which ripen in *July*; the Stalks decay in Autumn, but the Roots continue several Years.

There is a Variety of this with double Flowers, which is cultivated in Gardens, by the Title of Red Bachelors Button. This is an ornamental Plant, and continues long in flower. It is propagated by Slips which should be planted the Beginning of *August* in a shady Border of loamy Earth, where they will take Root in about 6 Weeks or two Months, and may then be transplanted into the Borders of the Flower Garden. These Roots should be annually transplanted, otherwise they frequently rot; and young Plants must be propagated by Slips to supply the Decay of the old Roots, which are not of very long Duration. This Sort thrives best in a soft loamy Soil, and in a shady Situation, where they have only the Morning Sun.

The 4th Sort is very common on dry Banks on the Side of Roads, in most Parts of *England*, so is not admitted into Gardens; there is a Variety of this with purple Flowers, which I find is by some supposed to be the same as the third, but is very different, for the Stalks of this are branched out much more; the Leaves are longer and more veined, and the Flowers of this stand singly on pretty long Foot Stalks, so are not produced in Clusters like those of the third. This is also very hairy, and the Enlargement of the Flowers is swollen like inflated Bladders. This flowers near a Month after the other, but the male and female Flowers grow on different Plants, as in the former.

There is a variety of this with double Flowers, which is propagated in Gardens by the Title of Double white Bachelors

Batchelors Button, and is an ornamental Plant in the Flower Garden, tho' being white it doth not make so good an Appearance as the other; however it adds to the Variety. This is propagated as the double Sort before-mentioned, but the Plants will thrive in a drier Soil, and a more open Exposure than that.

The 5th Sort grows very common in moist Meadows, and by the Side of Rivers in most Parts of England, where it is intermixed with the Grass. This rises with upright unbranched Stalks, near a Foot and a Half high, garnished with narrow Spear-shaped Leaves placed by Pairs opposite at each Joint. The Stalks are slender, channelled, and terminated by 6 or 7 purple Flowers on pretty long Foot Stalks which branch out. The Empalements of the Flower are striped with purple, and the Petals of the Flowers are deeply jagged in 4 narrow Segments, which appear as if torn; from whence the Country People have given it the Appellation of Ragged Robbin. It flowers in May, and the Seeds ripen in July. This Sort is never kept in Gardens, but there is a Variety of it with very double Flowers, which is propagated by the Gardeners for Ornament. It only differs from the single in the Multiplicity of the Petals, and produces no Seeds, so is propagated by Slips as the second Sort. It is commonly known by the Title of Double Ragged Robbin.

The 6th Sort grows naturally on the Alps, in Lapland, and the other cold Parts of Europe. This is a perennial Plant which delights in a moist Soil. The Stalks of this are erect half a Foot high, garnished with narrow Spear-shaped Leaves placed by Pairs opposite, like the former Sort, but are a little shorter and broader; the Bottom Leaves are broader than those upon the Stalks, and sit close to the Ground; they are smooth, and of a deep Green: The Flowers are produced in a Corymbus on the Top of the Stalk sitting close together; they are of a purple Colour, and the Petals are cut in the Middle. This flowers the Beginning of June, and the Seeds ripen in August. It is propagated by Seeds, and also by parting the Roots; it must have a moist Soil and a shady Situation, otherwise the Plants will not thrive. The Time for transplanting the Plants, and parting the Roots, is the same as for the second Sort, and the Seeds may be sown on a shady Border in March. In dry Weather the Ground must be kept moist, otherwise the Seeds will not grow. When the Plants come up and are fit to remove, they should be transplanted into a shady Border where they may remain to flower.

The seventh Sort grows naturally in Siberia; this hath a perennial Root, from which arise many narrow Leaves sitting close to the Ground. The Stalks rise a Foot high, dividing into Branches by Pairs. The Flowers grow out from the Division of the Branches, as also, at the Top of the Stalks. They are composed of five white Petals, which are divided in the Middle; these appear in June, and are succeeded by roundish Capsules filled with small angular Seeds, which ripen in August. This requires the same Treatment as the former Sort.

The 8th Sort was brought from Portugal to England, and is probably a Variety of one with single Flowers, which grows naturally in that Country; but is different from any we have in England. This approaches nearest to the Double Ragged Robbin, but is different from

that. It hath a perennial Root, from which arise many oblong narrow Leaves sitting close to the Ground. It divides into separate Heads like the second Sort, and from each of these come out an upright Stalk about 9 Inches high, which divides upwards by Pairs, and from the Middle of each Division, comes out a slender Foot Stalk 2 Inches long, sustaining 1 double Purple Flower at the Top, whose Petals are very much jagged at their Points; the Empalements of the Flowers are marked with deep purple Stripes. From the Side of the Stalks there are also Foot Stalks come out at the Wings, which for the most Part sustain but one Flower, though sometimes they have two; these Flowers being very double, are never succeeded by Seeds. The usual Time of this Plant flowering is in June, but sometimes it sends out fresh Stalks, which have Flowers in the Autumn. It is propagated by Slips as the third and fourth Sorts, but coming from a warm Country, it is impatient of much Cold, and requires a particular Treatment, for it does not thrive well in Pots, nor will it live through the Winter in open Borders, so that the only Situation in which I have seen it thrive, was where it was planted as close as possible to a South Wall in dry undunged Earth; for in rich or moist Ground the Roots presently rot, as they also do when they are watered. If they are planted in Brick Rubbish, they will still do better. I was favoured with this Plant by John Browning, Esq; of Lincoln's Inn, who received it from Portugal.

The 9th Sort grows naturally in the northern Parts of Europe. It is like the 4th Sort, but the Petals of the Flowers do not extend beyond the Empalement, and the Empalements are much larger and more swollen.

The other Species of *Lycnis* are now ranged under the following Genera, viz.

Agrostemma, *Cucubalus*, *Sapinaria*, and *Silene*, to which Articles the Reader is desired to turn for those which are not here enumerated.

LYCIUM. Lin. Gen. Pl. 232. *Jasminoides*. Nissol. Ast. R. Par. 1711. *Rhamnus*. C. B. P. 477. Boxthorn.

The Characters are,

The Flowers bath a small obtuse permanent Empalement, which is erect and divided into 5 Parts at the Top; the Flower is Funnel-shaped, of 1 Petal, with an incurved Tube, whose Brim is cut into 5 obtuse Segments, which spread open. It has 5 Awl-shaped Styles, a little inclined and shorter than the Tube, terminated by erect Summits. In the Center is situated a roundish Germen supporting a single Style, longer than the Stamina, crowned by a thick bifid Stigma; the Germen becomes a roundish Berry with 2 Cells, inclosing Kidney-shaped Seeds fastened to the middle Partition.

The Species are,

1. LYCIUM foliis linearilongioribus, tubo florum longiori, segmentis obtusis. Boxthorn with longer linear Leaves, a longer Tube to the Flower, and obtuse Segments. *Lycium foliis linearibus*. Hort. Cliff. 57. Boxthorn with linear Leaves.

2. LYCIUM foliis linearibrevioribus, tubo florum breviori, segmentis ovalibus patentissimis. Boxthorn with shorter linear Leaves, a shorter Tube to the Flower, and oval Segments spreading open.

3. LYCIUM foliis cuneiformibus. Vir. Cliff. 14. Boxthorn

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thorn with Wedge-shaped Leaves. *Jasminoides aculeatum, salicis folio, flore parvo ex albo purpurascente.* Michel. Gen. 224. Prickly Bastard Jasmine with a Willow Leaf and a small purplish white Flower.

4. *LYCIUM foliis lanceolatis crassiusculis, calycibus trifidis.* Lin. Sp. Pl. 192. Boxthorn with Spear-shaped thick Leaves, and trifid Empalements. *Jasminoides aculeatum, polygoni folio, floribus parvis albidis.* Swaw. Afr. 349. f. 349. Prickly Bastard Jasmine, with a Knot Grass Leaf, and small whitish Flowers.

5. *LYCIUM foliis ovato-lanceolatis, ramis diffusis, floribus solitariis patentibus alaribus, stylo longiori.* Boxthorn with oval Spear-shaped Leaves, diffused Branches, and single spreading Flowers proceeding from the Sides of the Branches with a longer Style.

6. *LYCIUM foliis lanceolatis acutis.* Boxthorn with Spear-shaped acute Leaves. *Jasminoides Sinense Halimi folio longiore & angustiore.* Du Ham. 306. China Bastard Jasmine with a narrow and longer Leaf.

7. *LYCIUM foliis oblongo-ovatis, crassiusculis, confertis, spinis robustioribus.* Boxthorn with oblong, oval, thick Leaves growing in Clusters, and stronger Spines.

8. *LYCIUM foliis lineari-lanceolatis confertis, calycibus brevibus acutis.* Boxthorn with linear Spear-shaped Leaves growing in Clusters, and short acute Empalements.

9. *LYCIUM inermis, foliis lanceolatis, alternis, perennantibus.* Smooth Boxthorn with Spear shaped ever-green Leaves placed alternate.

10. *LYCIUM foliis cordatis ovatis, sessilibus, oppositis perennantibus, spinis crassis bigeminis, floribus confertis.* Lycium with oval Heart-shaped Leaves placed opposite, which are ever-green, and sit close to the Stalks, with thick double Spines, and Flowers growing in Clusters. *Arbor Africana spinosa, foliis crassis cordatis & conjugatis, spinis crassis bigeminis.* Herm. Cat. 4. Prickly African Tree with thick, Heart-shaped Leaves growing by Pairs, and thick double Spines.

The 1st Sort grows naturally in Spain, Portugal, and at the Cape of Good Hope. This rises with irregular shrubby Stalks 10 or 12 Feet high, sending out several crooked knotty Branches, covered with a whitish Bark, and armed with long sharp Spines, on which grow many Clusters of narrow Leaves; these Thorns often put out one or two smaller on their Sides, which have some Clusters of smaller Leaves upon them; the Branches are garnished with very narrow Leaves an Inch and a Half long, and at the Base of these come out Clusters of shorter and narrower Leaves. The Flowers come out from the Side of the Branches, standing on short Foot Stalks; they have a short permanent Empalement of 1 Leaf, which is tubulous, and cut into 5 Segments at the Brim; the Flower is Funnel-shaped, of one Petal, with a long incurved Tube, cut into 5 obtuse Segments at the Brim; they are of a dull purple Colour, and have 5 Stamina almost as long as the Tube, with erect Summits. In the Center is situated a roundish Germen, supporting a Style longer than the Stamina, crowned by a bifid Stigma. The Germen afterward turns to a roundish fleshy Berry, of a yellowish Colour when ripe, inclosing several hard Seeds. This usually flowers in June and July, and the Seeds ripen in

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the Autumn, but there is frequently a few Flowers come out in all the Summer Months.

It may be propagated either by Seeds, Cuttings, or Layers. It by Seeds, they should be sown in Autumn soon after they are ripe, for if they are kept out of the Ground till Spring, they seldom come up the first Year. If the Seeds are sown in Pots, the Pots should be plunged into some old Tan in Winter, and in very severe Frost covered with Peas Haulm or Straw, but in mild Weather should be open to receive the Wet; in Spring the Pots should be plunged into a moderate hot Bed, which will soon bring up the Plants; these must be inured to bear the open Air as soon as the Danger of Frost is over, and when they are 3 Inches high, they may be shaken out of the Pots, and each planted in a small separate Pot, filled with loamy Earth, and placed in the Shade till they have taken new Root, when they may be removed to a sheltered Situation, where they may remain till Autumn; then they should be either removed into the Green-house, or placed under a hot Bed Frame to shelter them from hard Frost; for these Plants are too tender to live in the open Air in England, so they must be kept in Pots, and treated as Myrtles, and other hardy Green-house Plants; but when the Plants are grown strong, there may be a few of them planted in the full Ground in a warm Situation, where they will live in moderate Winters, but in hard Frosts they are commonly destroyed. If the Cuttings of these Plants are planted in a shady Border in July, and duly watered, they will take Root, and may then be treated as the seedling Plants.

The 2d Sort was raised in the Chelsea Garden from Seeds, which came from the Cape of Good Hope. This hath an irregular shrubby Stalk like the former, but they seldom rise more than 4 or 5 Feet high; the large Leaves are shorter and a little broader than those of the first, but the Tufts of small Leaves are narrower; the Tube of the Flower is shorter, the Brim is deeper cut into oval Segments which spread open; the Empalement is shorter and cut into acute Segments; the Flowers and Fruit are also smaller. These Differences are permanent, in all the Plants which I have two or three Times raised from Seeds. It flowers about the same Time as the first, and may be propagated in the same Way, the Plants also require the same Culture.

The 3d Sort grows naturally in the Hedges in the South of France, in Spain, and Italy. This hath many irregular shrubby Stalks, which rise 8 or 9 Feet high, sending out several irregular Branches, covered with white Bark, and armed with pretty strong Thorns; the Leaves are narrow at Bottom, growing broader upward, and are of a pale green Colour. The Flowers come out from the Side of the Branches, they are of a purplish white Colour and small, so make no great Appearance. This Sort flowers in June and July, but rarely produces any Seeds in this Country. The Leaves of this remain till Winter, when they fall off.

It may be propagated by Cuttings or Layers, as the first Sort. The Plants will live abroad in a sheltered warm Situation, but in very hard Frost they should be covered with Straw or Litter, otherwise the Branches will be killed, and sometimes the Roots are destroyed where they have not some Cover.

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The 4th Sort was brought from *Africa* by the late Dr. *Shaw*, where it grows naturally. This hath a shrubby Stalk which rises 7 or 8 Feet high, sending out several irregular Branches, armed with strong Spines, and garnished with short, thick, Spear-shaped oval Leaves, which stand without Order. The Flowers come out from the Side of the Branches, they are small and white, so make little Appearance. This Flowers in *July* and *August*, but does not produce Seeds in *England*. It may be propagated by Cuttings as the first Sort, but is too tender to live in the open Air in Winter in this Country, so the Plants must be kept in Pots, and removed into the Green-house in Autumn, and treated as other hardy Kinds of Green-house Plants.

The 5th Sort grows naturally in *China*, from whence the Seeds were brought to *England* a few Years past, and the Plants were raised in several Gardens, and by some were thought to be the *Thea*. This rises with weak, irregular, diffused Branches to a great Height, but require Support, otherwise they will trail on the Ground: I have measured some of these Branches, which in one Year have been upward of 12 Feet long; the lower Leaves are more than 4 Inches long, and 3 broad in the Middle; they are of a light green, and a thin Consistence, placed without Order on every Side the Branches; as the Shoots advance in Length, so the Size of the Leaves diminish, and toward the upper Part they are not more than an Inch long, and a Quarter of an Inch broad, they sit close to the Stalks on every Side. The Flowers come out singly at every Joint toward the upper Part of the Branches, standing on short slender Foot Stalks; they are of a dull purple Colour with short Tubes; the Brims are spread open broader than either of the former Sorts, and the Style is considerably longer than the Tube of the Flower. This Sort flowers in *August*, *September*, and *October*; the Plant is very hardy, and retains its Leaves till *November* before they decay. It propagates fast enough by its creeping Roots, which send out Suckers at a great Distance, and the Cuttings thrust into the Ground will take Root as freely as Willows.

The 6th Sort grows naturally in *China*, from whence the Seeds were brought to the Royal Garden at *Paris*, and the Seeds were sent me by Dr. *Bernard de Jussieu*, Demonstrator of the Plants in that Garden. This rises with a shrubby Stalk to a considerable Height, sending out many irregular Branches covered with a very white Bark, and armed with a few short Spines; the Leaves are about 3 Inches long, and one broad in the Middle; they are placed alternately on the Branches, and are of a whitish green. The Flowers of this Sort appear in *June* and *July*, which are succeeded by small round Berries that ripen in Autumn, when they are as red as Coral. This Sort is propagated by Cuttings, which should be planted in Spring before they begin to shoot, in a Border exposed to the Morning Sun, where they will take Root very freely; but these should not be removed till the Autumn, when they may be planted to cover high Walls, for the Branches are too weak to support themselves; and as the Leaves continue green as long as any of the deciduous Plants, they are proper Plants for such Purposes, for they may be trained to a great Height.

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The 7th Sort was raised in the *Chelsea* Garden from Seeds, which were brought me from the *Cape of Good Hope*. This rises with shrubby branching Stalks 7 or 8 Feet high, armed with long strong Thorns, that have several Clusters of Leaves upon them; the Branches are garnished with small oblong oval Leaves, placed without Order; sometimes they come out in small Clusters from one Point, at others they are single, standing on every Side the Stalk; these are of a light green, and a pretty thick Consistence, continuing green all the Year. These Plants have not as yet flowered here, so I can give no Account of them, but by the Fruit which I received entire, I make no doubt of its belonging to this Genus.

This Sort is pretty hardy, for it has lived abroad two Winters, where it was planted against a South East Wall. It may be propagated either by Layers or Cuttings as the first; and when the Plants have obtained Strength, they may be planted in a warm Situation, where they will live with very little Shelter in severe Frost. The Branches of this Sort are stronger than those of the former, so will not require the same Support. It will be proper to keep a Plant of this in Shelter to preserve the Kind, lest those in the open Air should be destroyed.

The 8th Sort has much the Appearance of the first, but the Branches are not so strongly armed with Thorns; they have also a whiter Bark, the Leaves are broader and of a lighter green, standing in Clusters at every Joint. The Flowers are smaller, of a deeper purple Colour, and have much shorter Empalements, which are cut into acute Segments. It flowers at the same Time with the first Sort, but does not produce any Seeds in this Country. This was raised in the *Chelsea* Garden, from Seeds which were sent me from the *Cape of Good Hope*; it is not so hardy as the former Sort, so requires Protection from very hard Frost; therefore the Plants should be kept in Pots and housed in the Winter, treating them as other hardy Green-house Plants. It may be propagated by Cuttings or Layers, as the first Sort.

The 9th Sort has been long an Inhabitant of the *Chelsea* Garden; it was raised from Seeds which came from *China*, and was for many Years taken for the Tea Tree, till it produced some Flowers, which discovered its true Genus. This rises with a strong woody Stalk 6 or 7 Feet high, sending out many Branches covered with a brown Bark and smooth, having no Thorns; they are garnished with Spear-shaped Leaves about 3 Inches long, and near three Quarters of an Inch broad, placed alternately on the Branches, standing on short Foot Stalks; they are of a deep green, and continue all the Year. The Flowers are white, and of the same Shape with the others of this Genus, but there has not been any Seeds as yet produced in *England*.

This Plant will live in the open Air, if planted in a warm Situation and a dry Soil; but it is of slow Growth, seldom shooting more than 3 or 4 Inches in a Season; it is also difficult to propagate, for the Branches which are laid down, will not take Root in less than 2 Years, and the Cuttings are with Difficulty made to grow. The best Time to plant them is in *May*, in Pots filled with light loamy Earth, plunging them into an old Bed of Tanners Bark, covering the Pots close with

Bell

Bell or Hand Glasses to exclude the external Air; these should be shaded every Day from the Sun; these Cuttings should be refreshed with Water once a Week, but it must not be given to them in too great Plenty. Those Cuttings which succeed, will have put out Roots by the Beginning of August, when they may be taken up and planted in small Pots, placing them in the Shade till they have taken new Root, and then they may be placed with other hardy exotick Plants in a sheltered Situation, till the End of October, when they may be put under a common Frame to shelter them in Winter. When the Plants have acquired Strength, they may be shaken out of the Pots, and planted in the full Ground in a warm Situation, where, if they are sheltered in severe Frosts, they will thrive better than in Pots.

The 10th Sort grows naturally at the Cape of Good Hope, from whence the Seeds were sent to Holland a few Years past, where the Plants were raised. This is a low shrubby Plant, which sends out Branches from the Ground upward, covered with a dark green Bark, and armed with short strong Thorns, which come out by Pairs, and sometimes there are double Pairs on the same Foot Stalk; these are situated just below the Leaves, and where there are 4, 2 of them point upward, and the other 2 downward. The Leaves are Heart-shaped, not much larger than those of the Box Tree, of the same Consistence and Colour, terminating in acute Points; they are placed by Pairs opposite, on very short Foot Stalks, standing pretty close together; these continue green all the Year. The Flowers come out from the Side of the Branches, on short slender Foot Stalks, each supporting 5 or 6 small white Flowers, which grow in a Cluster at the Top; these have very short Empalements, and pretty long Tubes, divided at the Brim into 5 acute Segments. These Flowers have an agreeable Odour, they appear in July and August, but are not succeeded by Seeds in England.

This Sort may be propagated by Cuttings, as the first Sort, which, if planted in July and shaded from the Sun, will take Root very freely; then they should be planted into separate small Pots, and placed in the Shade till they have taken new Root, after which they may be treated as the former Sort. This plant has not as yet been planted in the full Ground in England, but it lives through the Winter under a common Frame.

The other Species which were included in this Genus, are now removed to *Celastrus*.

LYCOPERSICON. Tourn. Inst. R.H. 150. Tab. 63. *Solanum*. Lin. Gen. Pl. 224. Love Apples, or Wolf's Peach.

The Characters are,

The Flower has a permanent Empalement of 1 Leaf, cut into 5 acute Segments at the Top, and permanent. The Flower has 1 Petal which is Wheel-shaped, with a very short Tube, and a large 5 cornered Brim, which spreads open and is plaited. It hath 5 small Awl-shaped Stamens, terminated by oblong Summits which close together. It hath a roundish Germen, supporting a slender Style the Length of the Stamens, crowned by an obtuse Stigma. The Germen becomes a roundish fleshy Fruit or Berry, divided into several Cells, inclosing many flat Seeds.

The Species are,

1. LYCOPERSICON caule inermi herbaceo, foliis pin-

natis incis, fructu rotundo glabro. Love Apple with an herbaceous unarmed Stalk, pinnated cut Leaves, and a smooth round Fruit. *Lycopersicon Galeni*. Ang. 217. The Wolf Peach of Galen.

2. LYCOPERSICON caule herbaceo, hirsutissimo, foliis pinnatis, incis, fructu compresso sulcato. Love Apple with a very hairy herbaceous Stalk, winged cut Leaves, and a compressed furrowed Fruit. *Solanum pomiferum, fructu rotundo striato molli*. C. B. P. 167. Apple-bearing Nightshade, with a soft, round, striated Fruit, commonly called Tomatas by the Spaniards.

3. LYCOPERSICON caule inermi, herbaceo, erecto, foliis ovatis dentato angulatis, subspinosis, fructu subrotundo sulcato. Love Apple with an herbaceous, erect, unarmed Stalk, oval Leaves indented, angular, and having a few Spines, with a roundish furrowed Fruit. *Lycopersicon fructu striato duro*. Tourn. Inst. R. H. 150. Wolf's Peach with a hard striated Fruit.

4. LYCOPERSICON caule inermi herbaceo, foliis inaequaliter pinnatis, foliolis obtuse-dentatis, racemis reflexis. Love Apple with an herbaceous, unarmed Stalk, Leaves unequally winged, whose Lobes are bluntly indented, and reflected Branches. *Lycopersicon inodorum*. Juss. Wolf's Peach having no Scent.

5. LYCOPERSICON caule inermi herbaceo, foliis pinnatis, incis, undatis, stylo longiore persistente. Love Apple with an unarmed, herbaceous Stalk, winged cut Leaves which are waved, and a longer permanent style to the Flower. *Lycopersicon pimpinellae sanguisorbae foliis*. Feuill. Obs. 3. p. 37. Wolf's Peach with Leaves like Burnet.

6. LYCOPERSICON caule herbaceo, procumbente, foliis pinnatifidis, glabris, floribus solitariis alaribus. Love Apple with an herbaceous trailing Stalk, Wing-pointed smooth Leaves, and Flowers growing singly from the Wings of the Stalk.

7. LYCOPERSICON caule inermi herbaceo, foliis pinnatis integerrimis. Love Apple with an unarmed herbaceous Stalk, and winged Leaves which are entire. *Solanum tuberosum esculentum*, C. B. P. 167. Esculent tuberous Nightshade, commonly called Potatoe, by the Indians *Batatas*.

The 1st Sort here mentioned, is supposed to be the *Lycopersicon* of Galen. This is an annual Plant, with an herbaceous, branching, hairy Stalk, which will rise to the Height of 5 or 6 Feet if supported, otherwise the Branches will fall to the Ground; these are garnished with winged Leaves of a very rank disagreeable Odour, composed of 4 or 5 Pair of Lobes terminated by an odd one; these are cut on their Edges, and end in acute Points. The Flowers come out from the Side of the Branches, on pretty long Foot Stalks, each sustaining several yellow Flowers, ranged in a single long Bunch; these are succeeded by round, smooth, pulpy Fruit, about the Size of a large Cherry. There are two Varieties of this, one with yellow, and the other with red Fruit. These Plants flower from June till the Frost stops them, and the Fruit ripens in Succession from the End of July, till the Frost kills the Plants; this Sort is used in Medicine.

The 2d Sort is very like the first, excepting the Fruit, which differs greatly; for those of the second Sort are very large, compressed at both Ends, and deeply furrowed all over the Sides. This Sort never varies to the

other, so that it is undoubtedly a distinct Species. This is the Sort which is commonly cultivated to put into Soups, and the *Portuguese* and *Spaniards* use them in many of their Sauces.

The 3d Sort is also annual; this rises with an erect herbaceous Stalk a Foot and a Half high, dividing into several Branches, which are garnished with oval angular Leaves, from 3 to 4 Inches long, and almost 3 broad in the Middle; they are placed alternately on pretty long Foot Stalks, which have one or two short Spines upon them, as there also is upon the Mid-rib of the Leaves. The Flowers come out singly upon Foot Stalks from the Side of the Branches, they are white, and are succeeded by red striated Fruit, which are firmer than those of the other Sorts, and about the Size of Cherries. This Fruit ripens in the Autumn, and the Plants decay soon after.

The 4th Sort is somewhat like the first, but the Leaves are unequally winged, having some smaller Lobes placed between the large ones; the Lobes of this are shorter, broader, and not cut like those of the first, but have some obtuse Indentures toward their Base. The Leaves of this Sort have not that rank disagreeable Odour which the two first have; the Fruit of it is not so large as those of the first, but they are round and smooth, and are very late before they ripen here; so that unless the Plants are raised early in the Spring, they will not produce ripe Fruit.

The 5th Sort is also annual; this hath a very branching herbaceous Stalk, spreading out into many Divisions, and is not so hairy as the two first; the Leaves are composed of a greater Number of Lobes, which are much shorter and more indented on their Edges, where they are a little waved. The Flowers stand on very long Foot Stalks, which branch out and support a large Number of Flowers at the Top; these have a longer Style than those of the other Species, which is permanent, remaining on the Top of the Fruit. This Sort is late in ripening the Fruit, so that unless the Plants are raised early in the Spring, the Fruit will not ripen in England.

The Seeds of these two Sorts were sent from *Péru* by Mr. *Joseph de Jussieu*, to the Royal Garden at *Paris*, Part of which was sent me by his Brother Dr. *Bernard de Jussieu*, of the *Royal Academy of Sciences*.

The 6th Sort was raised by Mr. *James Gordon*, Gardener at *Mile End*, who gave me some of the Seeds, but from what Country it came I could not learn. This hath very weak, trailing, smooth Stalks, not more than a Foot long, garnished with smooth Leaves, standing by Pairs opposite; these are regularly cut on the Sides almost to the Mid-rib, in Form of a winged Leaf; and these Segments are also indented on their Edges, and at their Points. The Flowers come out on the Side of the Stalks singly, they are of a whitish yellow Colour, and have a pretty large spreading Empalement, deeply cut at the Brim into many acute Segments which spread open. The Flowers are succeeded by small roundish Berries a little compressed at the Top, of an herbaceous yellow Colour when ripe.

These Plants are propagated by sowing their Seeds on a moderate hot Bed in *March*, and when the Plants are 2 Inches high, they should be transplanted into another moderate hot Bed, at about 4 Inches Distance from each other, observing to shade them until they have taken

Root; after which they must have frequent Waterings, and a large Share of fresh Air; for if they are too much drawn while young, they seldom do well afterwards.

In *May* these Plants should be transplanted either into Pots filled with rich light Earth, or into Borders near Walls, Pales, or Hedges, to which their Branches may be fastened to support them from trailing on the Ground, which they otherwise will do, and then the Fruit will not ripen, so that where these Plants are cultivated for the Sake of their Fruit, they should be planted to a warm Aspect, and the Branches regularly fastened as they extend, that the Fruit may have the Advantage of the Sun's Warmth to forward them, otherwise it will be late in the Season before they are ripe, and they are unfit for Use before; but when the Plants are brought forward in the Spring, and thus regularly trained to the South Sun, the Fruit will ripen by the latter End of *July*, and there will be a Succession of it till the Frost kills the Plants.

Some Persons cultivate these Plants for Ornament, but their Leaves emit a strong offensive Odour on being touched, which renders them very improper for the Pleasure Garden, and their Branches extend so wide and irregular, as to render them very unsightly, for they cannot be kept within Bounds, especially when they are planted in good Ground; therefore the Borders in which those Plants are placed for their Fruit, must not be too rich, for in a moderate Soil they will not be so luxuriant and more fruitful.

The *Italians* and *Spaniards* eat these Apples, as we do Cucumbers, with Pepper, Oil, and Salt; and some eat them stewed in Sauces, &c. and in Soups they are now much used in *England*, especially the second Sort, which is preferred to all the other. This Fruit gives an agreeable Acid to the Soup, though there are some Persons who think them not wholesome, from their great Moisture and Coldness, and that the Nourishment they afford must be bad.

The 3d Sort is never used either in the Kitchen or for Medicine, but the Plants are preserved for Variety, especially by those Persons who are Lovers of Botany. This Sort is propagated by Seeds, which should be sown on a hot Bed in the Spring, and the Plants afterwards treated as hath been directed for the *Capsicum*, with which this Plant will thrive and produce Plenty of Fruit annually.

The 7th Sort is the common *Potatoe*, which is a Plant so well known now, as to need no Description. Of this there are two Varieties, one with a red and the other with a white Root; that whose Roots are red, have purplish Flowers, but the white Root has white Flowers; these are supposed to be only accidental Variations, and not distinct Species.

The common Name of *Potatoe*, seems to be only a Corruption of the *Indian* Name *Batatas*. This Plant has been much propagated in *England* within thirty Years past, for although it was introduced from *America* about the Year 1623, yet it was but little cultivated in *England* till of late; these Roots being despised by the Rich, and deemed only proper Food for the meaner Sort of Persons; however, they are now esteemed by most People, and the Quantity of them which are cultivated

cultivated near *London*, I believe, exceeds that of any other Part of *Europe*.

This Plant was always ranged in the Genus of *Solanum*, or Nightshade, and is now brought under that Title again by Dr. *Linnaeus*; but as *Lycopersicon* has been established as a distinct Genus, on Account of the Fruit being divided into several Cells, by intermediate Partitions, and as the Fruit of this Plant exactly agrees with the Characters of the other Species of this Genus, I have inserted it here.

This is always propagated by its Roots, for it rarely perfects Seeds in *England*; and if it did, that Method would be more tedious and uncertain; and as the Roots greatly multiply, if planted in a proper Soil, there can be no Occasion for trying any other Method of Culture. The common Way is, either to plant the small Roots or Offsets entire, or to cut the larger Roots into Pieces, preserving a Bud or Eye to each; but neither of these Methods is what I would recommend, for when the smaller Offsets are planted, they generally produce a greater Number of Roots, but these are always small; and the Cuttings of the larger Roots are apt to rot, especially if wet Weather happens soon after they are planted; therefore what I would recommend is, to make Choice of the fairest Roots for this Purpose, and to allow them a larger Space of Ground, both between the Rows, as also in the Rows, Plant from Plant; by which Method I have observed, the Roots have been in general large the following Autumn.

The Soil in which this Plant thrives best, is a light sandy Loam, not too dry or over moist; this Ground should be well ploughed two or three Times, in order to break and divide the Parts; and the deeper it is ploughed, the better the Roots will thrive. In the Spring, just before the last Ploughing, there should be a good Quantity of rotten Dung spread on the Ground, which should be ploughed in the Beginning of *March*, if the Season proves mild, otherwise it had better be deferred until the Middle or latter End of that Month; for if it should prove hard Frost after the Roots are planted, they may be greatly injured, if not destroyed thereby; but the sooner they are planted in the Spring, after the Danger of Frost is over, the better it will be, especially in dry Land. In the last Ploughing, the Ground should be laid even, and then the Furrows should be drawn at 3 Feet Distance from each other, and about 7 or 8 Inches deep. In the Bottom of this Furrow the Roots should be laid, at about one Foot and a Half asunder; then the Furrow should be covered in with the Earth, and the same continued through the whole Field or Parcel of Land, intended to be planted.

After all is finished, the Land may remain in the same State till near the Time when the Shoots are expected to appear above Ground, when the Ground should be well harrowed over both Ways, which will break the Clods, and make the Surface very smooth; and by doing it so late, it will destroy the young Weeds, which, by this Time, will begin to make their Appearance; and this will save the Expence of Hoeing, as also stir the upper Surface of the Ground, which, if much Wet has fallen after the Planting, is often bound

into a hard Crust, and will retard the Appearance of the Shoots.

As I have allotted the Rows of Potatoes at 3 Feet Distance, it was in order to introduce the Hoe Plough between them, which will greatly improve these Roots; for by twice stirring and breaking the Ground between these Plants, it will not only destroy the Weeds, but also loosen the Ground, whereby every Shower of Rain will penetrate the Ground to the Roots, and greatly improve their Growth; but these Operations should be performed early in the Season, before the Stems or Branches of the Plants begin to fall, and trail on the Ground, because after that, it will be impossible to do it without injuring the Shoots.

If these Ploughings are carefully performed, it will prevent the Growth of Weeds, till the Haulm of the Plants cover the Ground, so that afterward there will be little Danger of Weeds growing so as to injure the Crop; but as the Plough can only go between the Rows, it will be necessary to make use of a Hoe to stir the Ground and destroy the Weeds in the Rows between the Plants; and if this is carefully performed in dry Weather, after the two Ploughings, it will be sufficient to keep the Ground clean until the Potatoes are fit to take up.

In Places where Dung is scarce, many Persons scatter it only in the Furrows where the Roots are planted; but this is a very poor Method, because when the Potatoes begin to push out their Roots, they are soon extended beyond the Width of these Furrows, and the new Roots are commonly formed at a Distance from the old; so will be out of the Reach of this Dung, and consequently will receive little Benefit from it. And as most of the Farmers covet to have a Crop of Wheat after the Potatoes are taken off the Ground, the Land will not be so thoroughly dressed in every Part, nor so proper for this Crop, as when the Dung is equally spread, and ploughed in all over the Land, nor will the Crop of Potatoes be so good. I have always observed, where this Method of planting the Potatoes has been practised, the Land has produced a fine Crop of Wheat afterward, and there has scarce one Shoot of the Potatoe appeared among the Wheat, which I attribute to the Farmers planting only the largest Roots; for when they have forked them out of the Ground the following Autumn, there have been 6, 8, or 10 large Roots produced from each, and often many more, and scarce any very small Roots; whereas, in such Places where the small Roots have been planted, there has been a vast Number of very small Roots produced; many of which were so small, as not to be discovered when the Roots were taken up; so have grown the following Season, and have greatly injured whatever Crop was on the Ground.

The Haulm of these Potatoes is generally killed by the first Frost in the Autumn, when the Roots should be taken up soon after, and may be laid up in Sand in any sheltered Place, where they may be kept dry, and secure from Frost. Indeed the People who cultivate these Roots near *London*, do not wait for the decaying of the Haulm, but begin to take up Part of them as soon as their Roots are grown to a proper Size for the Market; and so keep taking up from Time to Time,

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as they have Vent for them. There are others likewise, who do not take them up so soon as the Haulm decays, but let them remain much longer in the Ground; in which there is no Hurt done, provided they are taken up before hard Frost sets in, which would destroy them, unless where the Ground is wanted for other Crops; in which Case, the sooner they are taken up the better, after the Haulm is decayed. When these Roots are laid up, they should have a good Quantity of Sand or dry Earth laid between them, to prevent their heating; nor should they be laid in two large Heaps, for the same Reason.

LYCOPUS commonly called Water Horehound.

This Plant grows in great Plenty on moist Soils by the Sides of Ditches, in most Parts of England, but is never cultivated in Gardens, so that it would be needless to say any Thing more of it in this Place.

LYSIMACHIA. *Tourn. Inst. R. H. 141. Tab. 59. Lin. Gen. Pl. 188.* Loostrife; in French, Cornelle.

The Characters are,

The Empelement of the Flower is permanent, and cut into 5 acute Segments which are erect. The Flower is of 1 Petal, cut into 5 oblong oval Segments to the Bottom, which spread open flat. It hath 5 Awl-shaped Stamina about half the Length of the Petal, terminated by acute-pointed Summits. In the Center is situated a roundish Germen, supporting a slender Style the Length of the Stamina, crowned by an obtuse Stigma. The Germen turns to a globular Capsule with 1 Cell opening with 10 Valves, and filled with small angular Seeds.

The Species are,

1. *LYSIMACHIA paniculata, racemis terminalibus.* *Lin. Sp. Pl. 146.* Paniculated Loostrife with Bunches of Flowers terminating the Stalks. *Lysimachia lutea, major, quæ Dioscoridis.* *C. B. P. 245.* Greater yellow Loostrife of *Dioscoridis*.

2. *LYSIMACHIA racemis lateralibus pedunculatis.* *Lin. Sp. Plant. 147.* Loostrife with lateral Bunches of Flowers growing on Foot Stalks. *Lysimachia bifolia, flore globoso, luteo.* *C. B. P. 242.* Two leaved Loostrife with a yellow globular Flower.

3. *LYSIMACHIA spicis terminalibus patulis, lanceolatis, staminibus corollâ longioribus.* *Lin. Sp. Pl. 147.* Loostrife with Spear-shaped spreading Spikes of Flowers terminating the Branches, and Stamina longer than the Petals. *Lysimachia Orientalis angustifolia flore purpureo.* *Tourn. Cor. 7.* Narrow leaved Eastern Loostrife, with a purple Flower.

4. *LYSIMACHIA racemis simplicibus terminalibus, petalis obtusis, staminibus corollâ brevioribus.* *Lin. Sp. Pl. 146.* Loostrife with Spikes of Flowers terminating the Stalks, obtuse Petals to the Flower, and Stamina shorter than the Petal. *Lysimachia Orientalis minor, folijs glaucis, annuentibus, flore purpureo.* *Hort. Piss.* Smaller Eastern annual Loostrife, with nodding grayish Leaves, and a purple Flower.

5. *LYSIMACHIA petiolis ciliatis, floribus cernuis.* *Lin. Sp. Plant. 147.* Loostrife with hairy Foot Stalks and nodding Flowers. *Lysimachia Canadensis, Jalappæ folijs.* *Sarr. Canad.* Canada Loostrife with a Jalap Leaf.

6. *LYSIMACHIA spicâ simplici erecto terminali, petalis ovatis, staminibus corollâ longioribus.* Loostrife with a single erect Spike terminating the Stalk, oval Petals, and Stamina longer than the Flower. *Lysimachia spicata,*

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Asre albo, salicis folio. *Tourn. Inst. R. H. 141.* Loostrife with a Spike of white Flowers, and a Willow Leaf.

7. *LYSIMACHIA foliis subcordatis, floribus solitariis, caule repente.* *Vir. Cliff. 13.* Loostrife with Leaves nearly Heart-shaped, flowers growing singly, and a creeping Stalk. *Nummularia lutea major, C. B. P. 309.* Greater yellow Moneywort.

8. *LYSIMACHIA foliis ovatis acutiusculis, pedunculis folio longioribus, caule repente.* *Lin. Sp. Pl. 148.* Loostrife with oval acute-pointed Leaves, Foot Stalks longer than the Leaf, and a creeping Stalk. *Nummularia minor purpurascens, flore.* *C. B. P. 310.* Smaller Moneywort with a purplish Flower.

9. *LYSIMACHIA foliis ovatis, acutis, floribus solitariis, caule procumbente.* *Hort. Cliff. 52.* Loostrife with oval acute-pointed Leaves, Flowers growing singly, and a trailing Stalk. *Anagallis lutea nemorum. C. B. P. 252.* Yellow Pimpernel of the Woods.

10. *LYSIMACHIA foliis subquaternis, pedunculis verticillatis unifloris.* *Lin. Sp. Pl. 147.* Loostrife with Leaves generally placed by Fours, and Foot Stalks placed in Whorls round the Stalks, each sustaining a single Flower. *Lysimachia lutea minor, folijs nigris punctatis notatis, C. B. P. 245.* Smaller yellow Loostrife with Leaves marked with black Spots.

The 1st Sort grows by the Side of Ditches and Rivers in many Parts of England, so is not often admitted into Gardens, because the Roots creep far in the Ground, and send up Stalks at a great Distance, whereby it becomes often a troublesome Plant, otherwise for the Variety of its Flowers, it might deserve a Place in large Gardens, especially in moist Places, where better Things will not thrive. It rises with upright Stalks from 2 to 3 Feet high, garnished with smooth Spear-shaped Leaves placed sometimes by Pairs opposite, at others there are three, and frequently 4 of these Leaves placed round the Stalk at each Joint. The upper Part of the Stalk divides into several Foot Stalks, which sustain yellow Flowers growing in a Panicle; these have 1 Petal deeply cut into 5 Segments, spreading open. These appear in June and July, and are succeeded by roundish Seed Vessels, filled with small Seeds which ripen in Autumn. This is placed in the List of medicinal Plants. If the Roots of this Plant are taken up from the Places where it grows naturally in the Autumn, and planted in a moist Soil, they will thrive fast enough without Care.

The 2d Sort grows naturally in the northern Parts of England; this hath a perennial creeping Root, which sends up several erect Stalks near a Foot and a Half high, garnished at every Joint by two pretty long narrow Leaves placed opposite, whose Base fits close to the Stalk; they are about 3 Inches long, and more than half an Inch broad toward their Base, lessening gradually to the End, which terminates in acute Points; the Foot Stalks of the Flowers come out by Pairs opposite on each Side of the Stalks, they are an Inch long, sustaining at their Top a globular or oval Thyrs of yellow Flowers, whose Stamina are much longer than the Petals. This flowers at the same Time with the former Sort, but seldom produces Seeds, for the Roots creep so much as to render it barren. It is but seldom

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kept in Gardens for the same Reason as the former is rejected, but those who are desirous to have it may procure the Roots and plant them in a moist Soil, where it will soon spread.

The 3d Sort is a biennial Plant, which was discovered by Dr. *Tournefort* in the *Levant*, from whence he sent the Seeds to the Royal Garden at *Paris*, where they succeeded, and many of the *European* Gardens have since been furnished with it. This rises with an upright Stalk about a Foot high, garnished with Spear-shaped Leaves ending in acute Points; these are placed by Pairs opposite, they are smooth, and of a lucid green. The Flowers grow in a loose Spike, terminating the Stalks; the Flowers stand horizontally, spreading out on each Side the Stalk; they have longer Tubes than the other Species, and are of a purple Colour. These appear in *June*, and the Seeds ripen in *September*, soon after which the Plants decay.

It is propagated by Seeds, which should be sown in Autumn soon after they are ripe, and from those the Plants will come up the following Spring; but if the Seeds are kept out of the Ground till Spring; they will not vegetate till the Year after. When the Plants come up, they must be kept clean till Autumn, then they may be planted into the Borders of the Pleasure Garden, where they will flower and produce ripe Seeds the following Summer.

The 4th Sort is an annual Plant, which grows naturally in the *Levant*; this hath a shorter Stalk than the former. The lower Leaves are broader, the Spikes of Flowers shorter, and of a paler purple Colour. It flowers the Beginning of *July*, and the Seeds ripen in *September*. The Seeds of this Sort should be sown early in Spring, in the Place where the Plants are to remain, and when they come up, they will require no other Culture, but to keep them clean from Weeds, and if the Plants come up close, they should be thinned to the Distance of 4 or 5 Inches, which is all the Culture they will require.

The 5th Sort was first brought from *Canada*, where it grows naturally; this has a perennial creeping Root, sending up many erect Stalks, about 2 Feet high, garnished with oblong, oblique, smooth Leaves, placed by Pairs, opposite; these are veined on their under Side, and end in acute Points. The Flowers are produced from the Wings of the Stalks, each sitting on a long slender Foot Stalk; there are 3 or 4 of these arising from the short Branches, which come out on each Side the Stalk, at all the upper Joints. The Flowers are like those of the first Sort, but smaller; these appear in *June* and *July*, but are seldom succeeded by any Seeds in *England*.

This Sort spreads and propagates by Roots, in as great Plenty as the first, and is equally hardy, so requires no other Culture.

The 6th Sort grows naturally in *Spain*; this hath a perennial Root from which arise several upright Stalks, upward of 2 Feet high, garnished with narrow, smooth, Spear-shaped Leaves, which stand opposite, and at the Base of these come out short Side Branches, garnished with small Leaves of the same Shape. The Flowers are produced in a long, close, upright Spike, at the Top of the Stalk; they are cut into 5 oval Segments,

which are white, spreading open, and the Stamina stand out longer than the Petal. It flowers in *June*, and the Seeds ripen in Autumn.

This is the finest Species of this Genus, and as the Roots of it do not spread like those of the other, deserves a Place in the Pleasure Garden, where it is a very ornamental Plant for shady Borders. It loves a moist Soil and a shady Situation, where it will continue long in Beauty. It may be propagated by parting the Roots in Autumn, but by this Method it increases slowly, so that the only Way to have it in plenty, is by sowing the Seeds; these should be sown on an East-aspected Border in Autumn, soon after they are ripe, then the Plants will come up the following Spring, but those which are sown in the Spring, will not grow the same Year. When the Plants come up, they should be kept clean from Weeds, and if they are too close, some of them may be drawn out and transplanted on a shady Border, which will give the remaining Plants Room to grow till Autumn, when they may be transplanted into the Borders of the Flower Garden, where they are designed to flower; after which they will require no other Culture, but to keep them clean from Weeds, and dig the Ground between them every Spring.

The 7th Sort is commonly called, Moneyworth, or Herb Two-pence; this is a perennial Plant, which grows naturally in moist shady Places, in most Parts of *England*, so is not cultivated in Gardens. The Stalks of this trail on the Ground, and put out Roots, by which it soon spreads to a great Distance. The Leaves are almost Heart-shaped, and placed by Pairs. The Flowers come out singly from the Side of the Stalks; they are yellow, appearing in *June* and *July*.

The 8th Sort is a small trailing Plant, which grows on Bogs in mossy Places, in most Parts of *England*, but cannot be cultivated on dry Ground. The Stalks seldom are more than 3 or 4 Inches long, and are terminated by 3 or 4 small Flowers, of a bright purple Colour, growing in a Bunch. This flowers in *June*, but is never planted in Gardens.

The 9th Sort is a perennial Plant, with trailing Stalks, which grows naturally in moist Woods, in most Parts of *England*, so is not cultivated in Gardens. The Leaves stand opposite by Pairs, at each Joint; they are smooth, oval, and acute-pointed. The Flowers come out singly from the Side of the Stalk, on long Foot Stalks; they are yellow, and spread open like the Flowers of Chickweed. This flowers in *May* and *June*, and the Seeds ripen in Autumn.

The 10th Sort grows naturally among Rushes and Reeds, by the River's Side in *Holland*; this hath a perennial creeping Root like the first. The Stalks rise a Foot high; they are slender, and are garnished by Spear-shaped Leaves, an Inch and a Half long, and a Quarter of an Inch broad in the Middle, placed sometimes by Pairs, at others by Threes, and often 4 at each Joint, surrounding the Stalk. The Flowers also come out at each Joint, 4 of them standing round the Stalk in Whorls, each having a distinct slender Foot Stalk, an Inch long. The Flowers are small and yellow; they appear in *June*, and are succeeded by Seeds, which ripen in Autumn; it may be treated as the first Sort, and is equally hardy.

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LYSIMACHIA GALERICULATA. See Scutellaria.

LYSIMACHIA NON PAPPOSA. See Oenothera.

LYSIMACHIA SILIQUOSA. See Epilobium.

LYTHRUM. Lin. Gen. Pl. 532. Salicaria. Tourn. Inst. R. H. 253. Tab. 129. Willow Herb, or purple Loostrike.

The Characters are,

The Flower hath a cylindrical striated Empalement of 1 Leaf, indented at the Brim in 12 Parts, which are alternately smaller. It has 6 oblong blunt Petals, which spread open, whose Tails are inserted in the Indentures of the Empalement, and 10 slender Stamina the Length of the Empalement, the upper being shorter than the lower, terminated by single rising Summits. In the Center is situated an oblong Germen, supporting an Awl-shaped declining Style, crowned by a rising orbicular Stigma. The Germen afterward turns to an oblong acute Capsule with 2 Cells filled with small Seeds.

The Species are,

1. LYTHRUM foliis oppositis cordato-lanceolatis, floribus spicatis dodecandris. Lin. Sp. Pl. 446. Lythrum with Heart-Spear-shaped Leaves, placed opposite, and Flowers growing in Spikes, having 12 Stamina. Salicaria vulgaris, purpurea, foliis oblongis. Tourn. Inst. R. H. 253. Common purple Willow Herb with oblong Leaves.

2. LYTHRUM foliis cordato-ovatis, floribus verticillato-spicatis tomentosis. Lythrum with oval Heart-shaped Leaves, and Flowers growing in whorlly Spikes, which are woolly. Salicaria purpurea, foliis subrotundis. Tourn. Inst. R. H. 253. Purple Willow Herb with roundish Leaves.

3. LYTHRUM foliis alternis linearibus, floribus hexandris. Hort. Upsal. 118. Lythrum with linear alternate Leaves, and Flowers having 6 Stamina. Salicaria byssopi folio angustiore. Tourn. Inst. R. H. 253. Willow Herb with a narrow Hyssop Leaf.

4. LYTHRUM foliis lanceolatis ternis glabris, floribus spicatis decandris. Lythrum with smooth Spear-shaped Leaves, placed by Threes, and Flowers growing in Spikes, which have 10 Stamina. Salicaria Lusitanica, angustiore folio. Tourn. Inst. R. H. 253. Portugal Willow Herb with a narrower Leaf.

5. LYTHRUM foliis oblongo-ovatis inferne oppositis, superne alternis, floribus hexandris. Lythrum with oblong oval Leaves, opposite below, but above alternate, and Flowers having 6 Stamina. Salicaria Hispanica, byssopifolia, floribus oblongis saturate caeruleis. Tourn. Inst. 253. Spanish Willow Herb with a Hyssop Leaf, and oblong deep blue Flowers.

6. LYTHRUM foliis oblongo-ovatis oppositis, floribus tetrapetalis. Lythrum with oblong oval Leaves, placed opposite, and Flowers having 4 Petals. Salicaria byssopi folio latiore. Tourn. Inst. R. H. 253. Willow Herb with a broader Hyssop Leaf.

7. LYTHRUM foliis oppositis, subtus tomentosis subpetiolatis, floribus verticillatis lateralibus. Lin. Sp. Pl. 446. Willow Herb with opposite Leaves, woolly on their under Side, and Flowers growing in Whorls round the Stalks.

8. LYTHRUM foliis oppositis linearibus petiolatis, floribus dodecandris. Lin. Sp. Pl. 446. Willow Herb

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with linear Leaves, placed opposite, having Foot Stalks, and Flowers with 12 Stamina.

9. LYTHRUM foliis oppositis linearibus, floribus oppositis hexandris. Lin. Sp. Pl. 447. Willow Herb with linear opposite Leaves, and Flowers having 6 Stamina, placed opposite.

10. LYTHRUM foliis oblongo-ovatis inferne oppositis superne alternis, floribus hexandris, caule erecto. Willow Herb with oblong oval Leaves, placed opposite below, and above alternate, with Flowers having 6 Stamina, and an erect Stalk. Salicaria Americana, byssopi folio latiore, floribus minimis. Houst. Mss. American Willow Herb with a broader Hyssop Leaf, and very small Flowers.

The 1st Sort grows naturally by the Side of Rivers and Ditches, in most Parts of England. It has a perennial Root, from which come forth several upright angular Stalks, which rise from 3 to 4 Feet high; they are of a purple Colour, and garnished with oblong Leaves, placed sometimes by Pairs, opposite; at others there are 3 Leaves at each Joint, standing round the Stalk. The Flowers are produced in a long Spike at the Top of the Stalk; they are of a fine purple Colour, and make a fine Appearance. This flowers in July, and the Seeds ripen in Autumn; although this Plant is despised, because it grows common, yet it merits a Place in Gardens, better than many other which are propagated with Care, because they are more rare. It is easily cultivated by parting the Roots in Autumn, and should be planted in a moist Soil, where it will thrive and flower without any other Care than the keeping it clean from Weeds.

There is a Variety of this with an hexangular Stalk, and generally with 3 Leaves at each Joint; but this is only accidental, for the Roots of this, when removed into a Garden, come to the common Sort.

The 2d Sort hath perennial Roots like the first, from which come out upright branching Stalks, 3 Feet high, garnished with oval Heart-shaped Leaves about one Inch long, and three Quarters of an Inch broad; they are downy, and placed by Threes round the Stalk. The Flowers are produced in long Spikes at the Top of the Stalks, but they are disposed in thick Whorls, with Spaces between each; they are of a fine purple Colour, and appear at the same Time with the former. This may be propagated as the first Sort, and is equally hardy.

The 3d Sort grows naturally on moist Bogs in many Parts of England, so is seldom admitted into Gardens; this has a perennial Root, sending up 2 or 3 branching Stalks, about a Foot high, garnished with narrow Leaves, placed alternate. The upper Part of the Stalk is garnished with Flowers, which come out from the Side, singly at each Joint, standing close to the Base of the Leaves; they are small, and of a light purple Colour, appearing in June, and the Seeds ripen in Autumn.

The 4th Sort grows naturally in Spain and Portugal, in moist Places by the Side of Waters; this has a perennial Root, and Stalks like the first, which seldom grow more than 3 Feet high, garnished with narrower and shorter Leaves than the first, which are smooth, and placed by Threes round the Stalk. The Flowers grow in Spikes at the Top of the Stalks; they are of a light

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a light purple Colour, and appear in *July*. The Seeds ripen in Autumn. This Sort is hardy, and may be propagated as the first.

The 5th Sort grows naturally in *Spain* and *Portugal*, from both which Countries I have received the Seeds. The Root of this is perennial. The Stalks are slender, not more than 9 or 10 Inches long, spreading out on every Side. The lower Part of the Stalks are garnished with oblong oval Leaves, placed opposite. On the upper Part of the Stalks, the Leaves are narrower, and placed alternate. The Flowers come out singly from the Side of the Stalks at each Joint; they are larger than those of the common Sort, and of a deeper purple Colour, so make a fine Appearance in *July*, when they are in Beauty.

This Sort has never produced any Seeds in *England*, and the severe Winter in 1740, killed all the Plants here, since which Time I have not seen any of the Plants in the *English* Gardens.

The 6th Sort grows naturally on the *Alps*, and other mountainous Parts of *Italy*; it was sent me from *Verona*, near which Place it grows in Plenty. It hath a perennial Root, sending out a few small Stalks, 5 or 6 Inches long, garnished with small, oblong, oval Leaves, placed opposite. The Flowers are small, of a light purple Colour, and come out singly from the Wings of the Stalk; these appear in *June*, and the Seeds ripen in Autumn.

The 7th Sort grows naturally in the northern Parts of *America*; this rises with a stiff branching Stalk, a Foot and a Half high, garnished with oblong Leaves, which are downy, and placed opposite, standing on very short Foot Stalks. The Flowers are produced in Whorls round the Stalks; they are of a pale purple Colour, and appear in *July*; these are succeeded by Capsules with two Cells, filled with Seeds which ripen in Autumn.

The 8th Sort grows naturally in *Virginia*, from whence I received the Seeds; this rises with an upright woolly Stalk, near 2 Feet high, garnished with linear Leaves, placed opposite on Foot Stalks. The Flowers come out from the Wings of the Stalks singly; they

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are small, tubulous, and of a pale purple Colour, so make no great Appearance; these appear in *July*, and in warm Seasons perfect Seeds; but the Roots of this Sort increase so fast, as to render the propagating of the Plants by Seeds unnecessary, when once obtained.

The 9th Sort grows naturally in *North America*. It has a perennial Root. The Stalks are slender, about a Foot high, garnished with linear Leaves, placed opposite, which are entire. The Flowers come out singly from the Wings of the Leaves, on the upper Part of the Stalks; they are small, white, and have 6 Petals. The Empalement is streaked, and cut at the Top into 6 Parts, and the Flower has 6 Stamina. This flowers in *June*, and the Seeds ripen in Autumn.

The 10th Sort was discovered by the late Dr. *Houssoun*, at *La Vera Cruz*, growing in Swamps, where the Water had stagnated. This hath a ligneous Root, from which arise 2 or 3 slender Stalks, upward of 2 Feet high, garnished with oblong, oval, smooth Leaves, which, on the lower Part of the Stalks, are opposite, but those on the upper Part are narrower and alternate. The Flowers come out from the Wings of the Leaves, on the upper Part of the Stalk singly; they are small and white, having six Petals, and six Stamina; these do not appear till the second Year from Seed, and have not produced any good Seeds in *England*.

This Sort is tender, so will not live in the open Air in *England*. It is propagated by Seeds, which should be soon in Pots, and plunged into an old hot Bed the first Season, for the Seeds never rise the first Year, unless they are sown in Autumn; the Pots should be sheltered in Winter, and the Spring following placed on a hot Bed to bring up the Plants; these must be treated as other tender Plants from the same Country.

All the other Sorts, when raised from Seeds, should be sown in Autumn, otherwise the Seeds will remain a Year in the Ground, so that those Seeds which are brought from *America*, never grow the same Year they are sown, for which Reason the Ground should not be disturbed, but left till the following Spring, when the Plants will come up if the Seeds were good.

The End of VOL. I.



The first of the two is a small, round, black, smooth, and shining seed, which is the seed of the plant. The second is a small, round, black, smooth, and shining seed, which is the seed of the plant.

The End of V-O-A. I